

Chemical Week

September 29, 1956

Price 35 cents



Big boost for offshore sulfur as Freeport contracts to mine Humble's Gulf of Mexico deposits p. 21

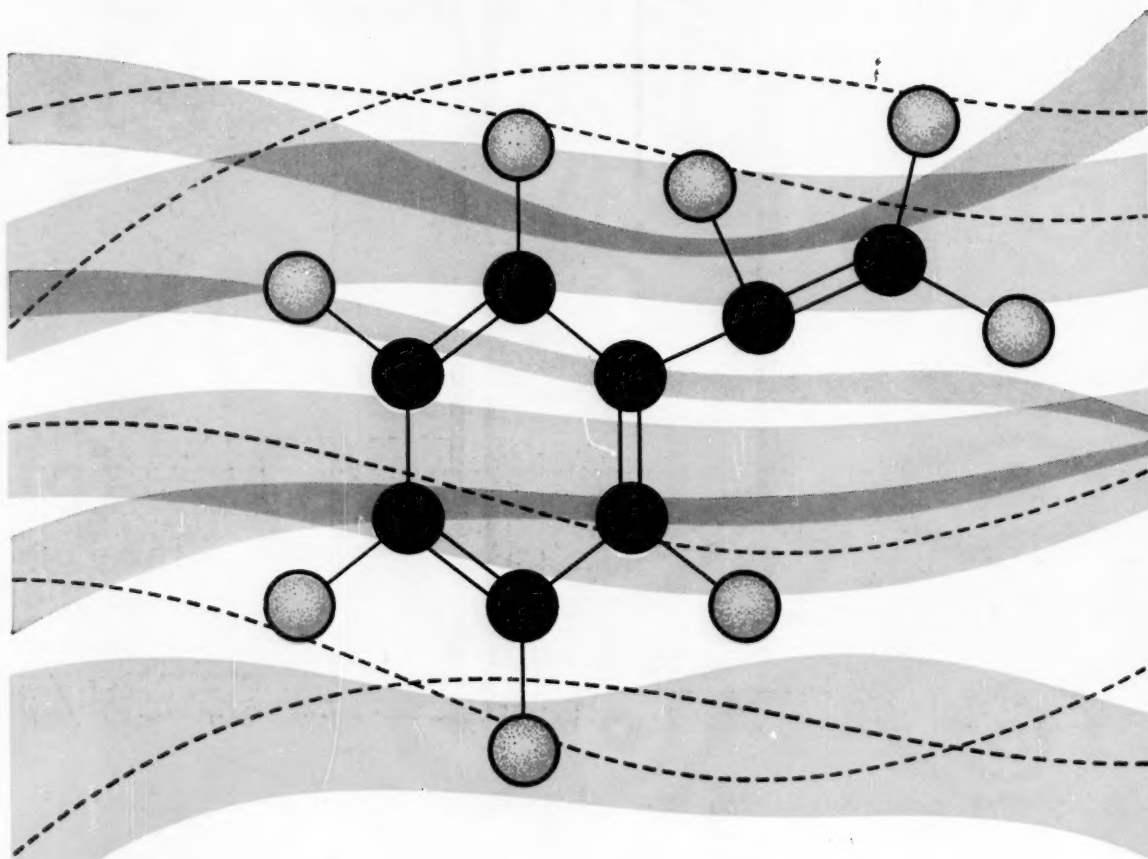
► **Spencer's Ken Spencer: He's running his firm's new diversification into nylon** p. 30

Are insecticidal smokes hot market factor or passing fad? Specialty makers seek the answer . . p. 46

What's the latest market outlook? Compare your prospects with CW's nationwide survey results . p. 64

Wall Street looks hard at research programs in rating company stocks for investment programs . . p. 76

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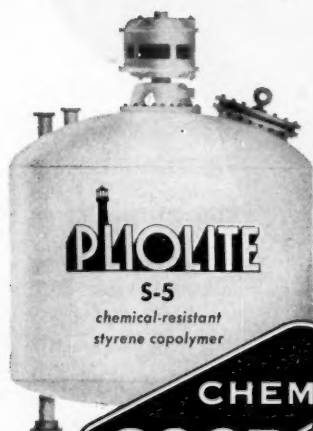
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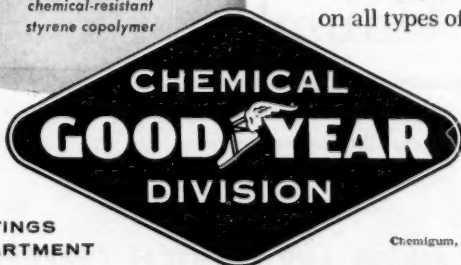


Photo courtesy The Miller Paint Company, Portland, Oregon

Why the paint outlook at Lookout Point is so bright



chemical-resistant
styrene copolymer



COATINGS
DEPARTMENT

In early 1955, hundreds of gallons of paint were used to decorate and protect the walls and floor of the powerhouse at Lookout Point Dam. Today, these bright, attractive finishes are in excellent condition and promise years' more protection.

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Chemical Week

TOP OF THE WEEK

September 29, 1956

Union Carbide moves closer to the consumer with acquisition of plastic film maker Viskingp. 23

Chemical process firms stand high among the top hundred national advertisers this yearp. 38

First silvichemical-from-bark plants go onstream—Pacific Lumber's at Scotia, Calif., and Rayonier's at Vancouver, B.C.p. 54

8 OPINION

8 UPCOMING MEETINGS

17 BUSINESS NEWSLETTER

21 Freeport and Humble get together on off-shore sulfur

22 Should "defense essentiality" be used to bar chemical imports?
Here's how SOCMA helps customs men make faster identification of coal-tar intermediates

23 Pacific Northwest electrochemical companies may have all their interruptible power cut off next week

San Francisco Bay's air pollution control group gets ready for action

24 Food additive fight flairs again

25 WASHINGTON ANGLES

27 CHARTING BUSINESS

30 ADMINISTRATION

Series of 'calculated risks' pays off 1,000-fold in 10 years for Kenneth Spencer

38 SALES

40 Firestone unveils 15,000-gal. store-away storage unit

42 How National Chemical Credit Assn. serves the industry

46 SPECIALTIES

Insecticidal smokes climb into the \$4-5-million/year bracket

47 Post Office is angry about charges that it paid too much for paint

54 PRODUCTION

56 Titanium production costs are out in the open as Bureau of Mines reveals figures on Boulder City operations

61 TECHNOLOGY NEWSLETTER

64 MARKETS

CW surveys the nation's markets, finds prosperity and plenty, now and later

71 MARKET NEWSLETTER

76 RESEARCH

Company research programs get closer look by Wall Street investment analysts

80 Chemstrand airs further details on its new nylon dyeing process

82 Bubble bath aids atom studies

Vol. 79

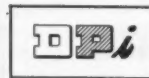
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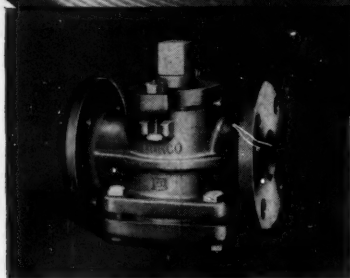
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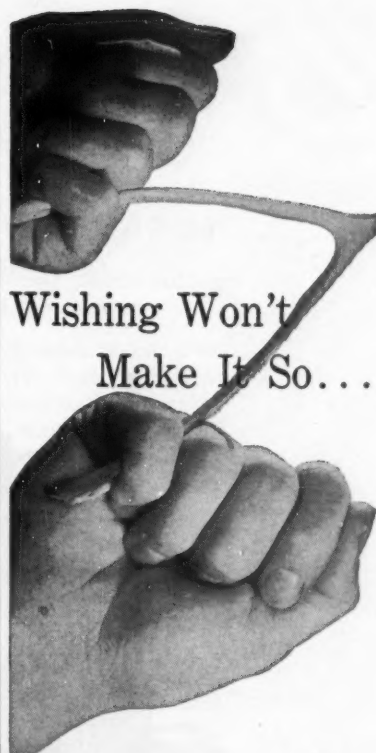
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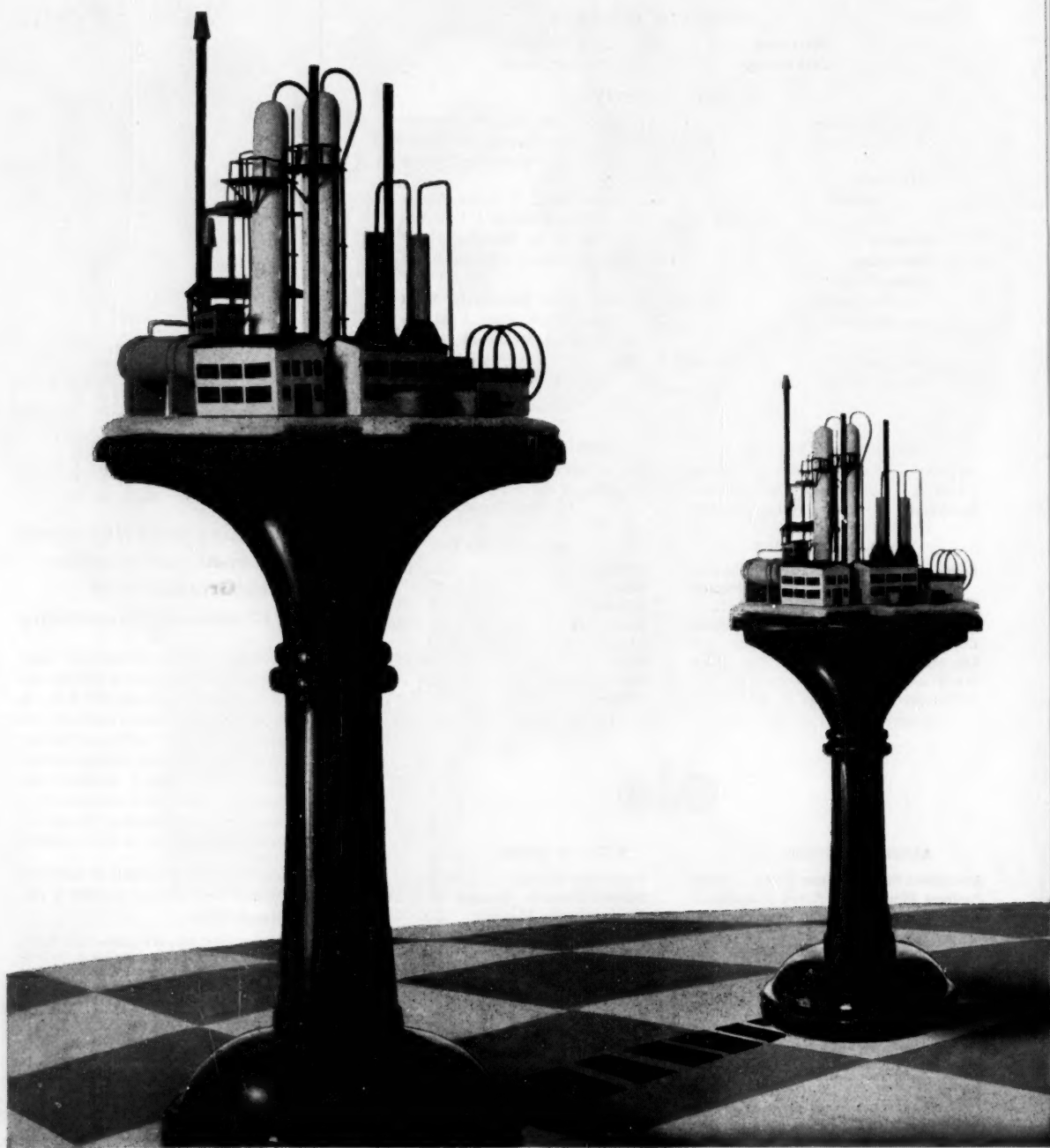


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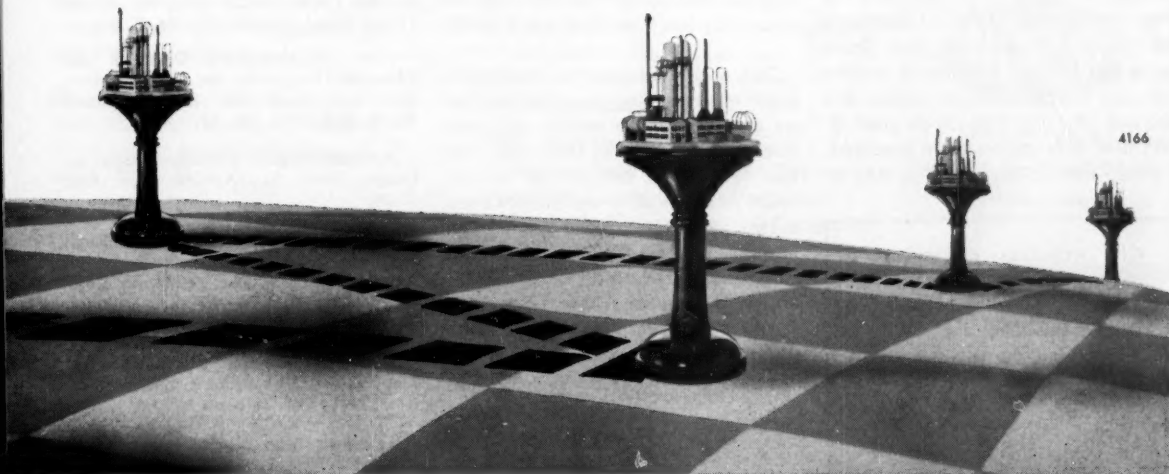
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OPINION

Small-Firm Organization

TO THE EDITOR: The *CW* Report (Aug. 25) by Winfield McNeill is most interesting to any person in the position of management, for, with a scalpel effect, he clearly outlines means of delineating organization positions.

The article, however, is written for the very large corporation, as many of the articles on such analysis are. It would seem that a similar type of presentation written for the smaller company in the \$1-million- to \$5-million range would be pertinent, because companies of this size usually do not have the specialists who can point up such organization. . . .

Too many articles, like Mr. McNeill's, are directed to corporations of \$50 million to \$500 million sales, when such companies are the unique rather than the common.

In conclusion, I wish to thank Mr. McNeill for an interesting presentation, but would encourage him to write an article for a field that is probably more pregnant with opportunities, namely, the revision of organization in the medium-size companies.

ERNEST H. WAKEFIELD
President
Radiation Counter Laboratories, Inc.
Skokie, Ill.

'It Isn't New'

TO THE EDITOR: . . . The article (Aug. 4) "Kickbacks Are Hurting Textile Chemicals" is all very interesting to me.

I am sure that you are not naive enough to think that the days of graft in drugs, dyestuffs and chemicals for the textile industry are past. Some years ago, we ran a series of articles exposing or attempting to expose this practice. We didn't do much good. It isn't new. It continues to be practiced. I would like to know how to stop it.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

Furthermore, I am troubled with the large number of companies that use individual jobbers as purchasing departments for their manufacturing operations. These jobbers get a 5% discount on certain materials and split it with the mill. That, to my mind, is an unfair trade practice.

I am quite sure that companies like Du Pont, as an example, would be happy to have you expose such practices, naming names, because I know it is very disturbing to them. . . .

FRANK P. BENNETT
America's Textile Reporter
Boston, Mass.

'Can't Beat 'Em'

TO THE EDITOR: A copy of *CHEMICAL WEEK* (June 30) was brought home by Mr. Kilpatrick, who is with Kaiser.

We enjoyed immensely the article on page 114, "Turtle Takes to the Air." The turtle was built by my brother, Bob Curd, Jr., who is with Multiplastic Co., and we had heard about it. . . .

Our daughter Dale (14) was in Chicago during July, and we received the following succinct comment from her:

"I saw the turtle. It is the funniest thing I ever saw. And the lighted guts. Man, you can't beat 'em."

JUNE C. KILPATRICK
Spokane, Wash.

No Stock Issue Planned

TO THE EDITOR: We have read with a great deal of interest your article (Aug. 18) [on Van Waters & Rogers]. . . .

The only correction we would have made was regarding the statement that we are planning on issuing additional stock as a method of financing. This has never been brought up to our board of directors or our finance committee, and we are of the opinion that any expansion could be financed out of earnings, as the cash dividends that we are paying annually have been about 30% of our earnings, the balance being retained for expansion purposes.

GEO. VAN WATERS
President

Van Waters & Rogers, Inc.
Seattle, Wash.

SEE YOU THERE

European Federation of Chemical Engineering, annual meeting of process engineers, Hamburg, Germany, Oct. 1-3.

American Mining Congress Metal Mining-Industrial Minerals, convention and exposition, Shrine Exposition Hall, Los Angeles, Oct. 1-4.

Technical Assn. of the Pulp & Paper Industry, 11th plastics-paper conference, at Institute of Paper Chemistry, Appleton, Wis., Oct. 3-4.

American Institute of Electrical Engineers, fall meeting, Morrison Hotel, Chicago, Oct. 1-5.

Canadian Electrical Manufacturers Assn., 12th annual meeting, Sheraton Brock Hotel, Niagara Falls, Ont., Oct. 2-4.

Society of Cosmetic Chemists, Barbizon Plaza Hotel, New York, Oct. 4-5.

National Metal Congress and Exposition, Cleveland, Oct. 8-12.

Society of the Plastics Industry, Inc., conference, The Wentworth Hotel, Portsmouth, N.H., Oct. 11-12.

Salesmen's Assn. of the American Chemical Industry, 5th chemical sales clinic, Hotel Commodore, New York, Oct. 15.

National Assn. of Corrosion Engineers, Drake Hotel, Philadelphia, Oct. 15-17.

Assn. of Official Agricultural Chemists, 70th annual, Shoreham Hotel, Washington, D.C., Oct. 15-17.

Canadian Agricultural Chemicals Assn., 4th annual, Sheraton Brock Hotel, Niagara Falls, Ont., Oct. 16-18.

Antibiotics Annual Symposium, Willard Hotel, Washington, D.C., Oct. 17-19.

Federation of Paint and Varnish Production Clubs, 34th annual, Netherland Hilton Hotel, Cincinnati, Oct. 21-24.

Assn. of Consulting Chemists and Chemical Engineers, Inc., annual banquet and symposium, Hotel Belmont Plaza, New York, Oct. 23.

National Assn. of Corrosion Engineers, Gunter Hotel, San Antonio, Tex., Oct. 23-26.

American Society of Mechanical Engineers and the American Institute of Mining, Metallurgical and Petroleum Engineers, solid fuels conference, Sheraton Park Hotel, Washington, D.C., Oct. 25-26.

American Council of Independent Laboratories, 29th meeting, Savoy Plaza, New York, Oct. 28-Nov. 1.

American Management Assn., Hotel Roosevelt, New York, Oct. 31-Nov. 2.

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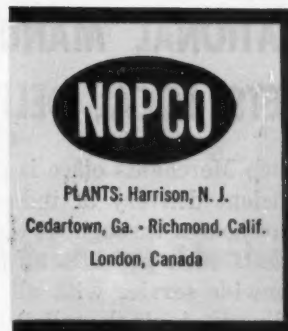
Sometimes textile dyes are unpredictable. When a skein of wool or cotton shows up with unwelcome streaks, many dyers' remedy is the costly one of bleaching or stripping out part of the color, then re-dyeing.

But with a Nopco surface active agent that controls dye absorption, dyers get the *exact* shade they want—every time.

We've mentioned this example merely to show that Nopco research springs directly from practical

needs. Other Nopco processing chemicals have achieved economies in many fields—from dispersing pitch particles to help make finer paper, to extending die life in wet-drawing wire, to reducing breakage waste for plastics molders by giving smooth release from the molds.

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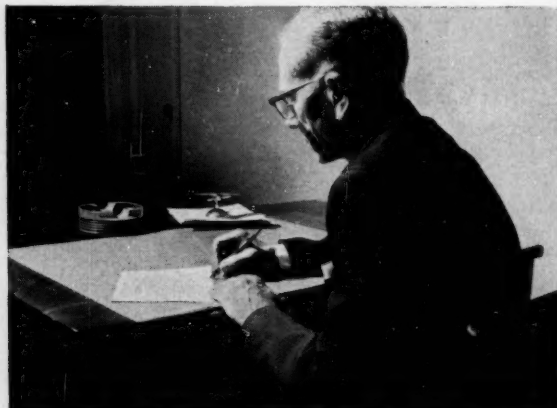
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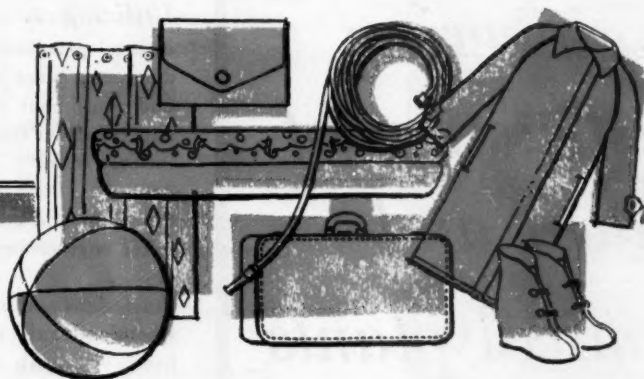
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Chemico has technical ingenuity. It maintains continuous interest in the development of new processes and the improvement of existing techniques for the production of synthetic ammonia, methanol, formaldehyde, nitric acid, urea, sulfuric acid, acetylene and allied products.

Chemico has complete facilities. It handles every detail of a project from preliminary planning and economic surveys, through engineering and design—purchasing, inspection, shipment of material and equipment—to erection and start-up operation.

It maintains a modern, fully equipped research laboratory and pilot plant, where its own and clients' processes are thoroughly tested.

Chemico has a record of achievement.

In **synthetic ammonia**, Chemico-designed plants provide approximately 25% of the world's total production.

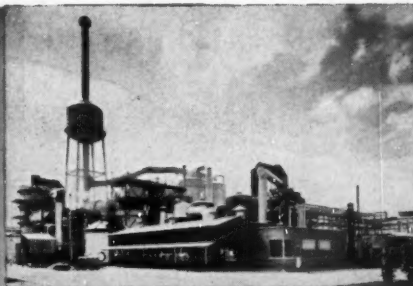
In **sulfuric acid**, Chemico-designed contact plants yearly produce over 30% of the world's total production.

In **nitric acid**, Chemico-designed plants are operating with full power recovery.

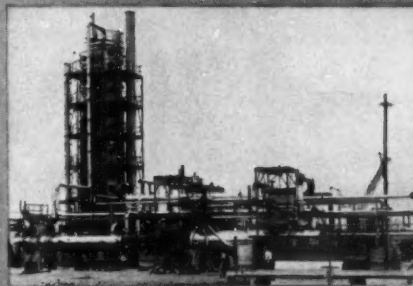
In **ammonium nitrate**, Chemico-designed plants are producing over 1,500,000 tons per year.

In **ammonium sulfate**, Chemico-designed plants are producing over 2,500,000 tons per year.

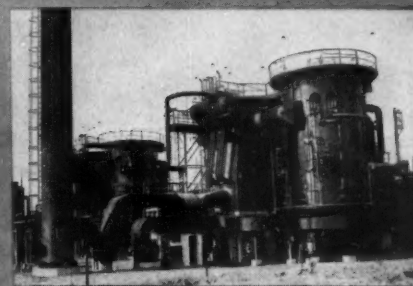
In **acetylene**, Chemico-designed plants in operation and under construction will have a total capacity of over 150,000,000 pounds per year.



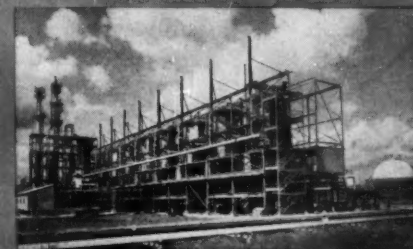
Sulfuric acid regeneration plant in Texas



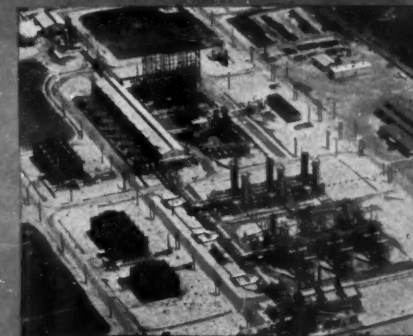
Nitric acid plant in Florida



Gas reforming plant in France



Acetylene plant in Louisiana

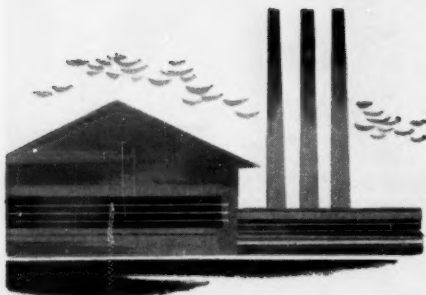


Synthetic ammonia plant in Texas

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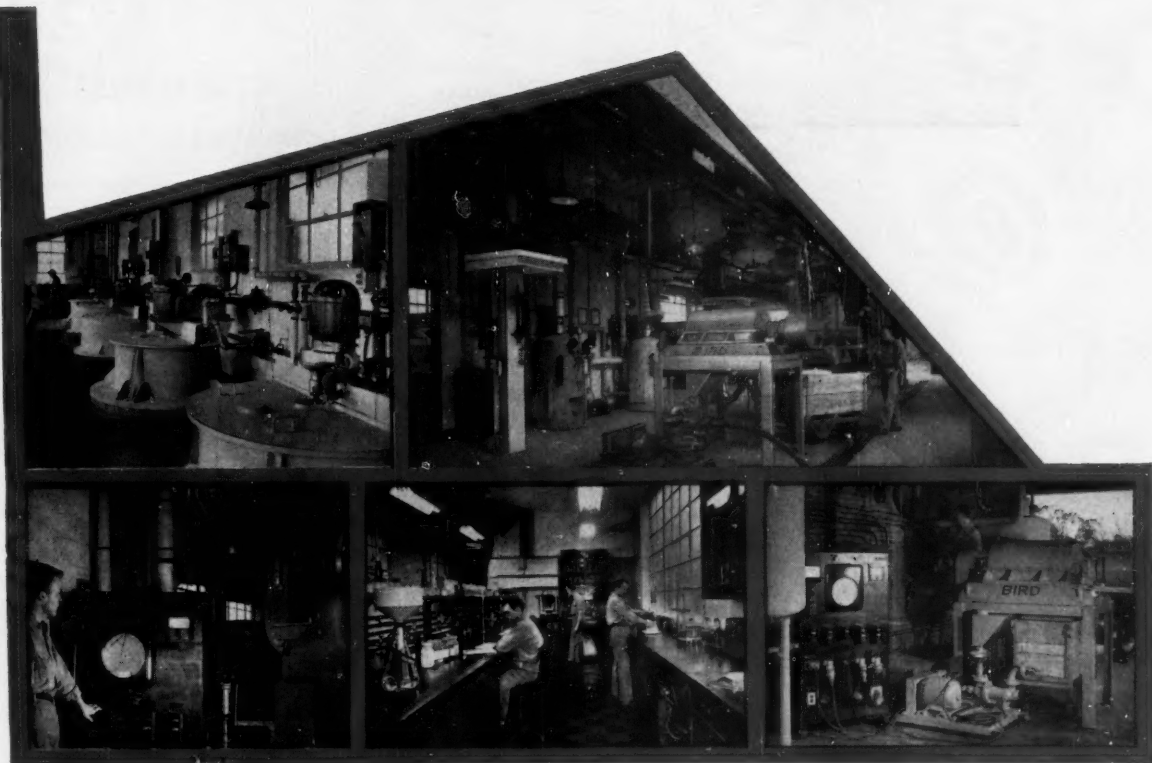
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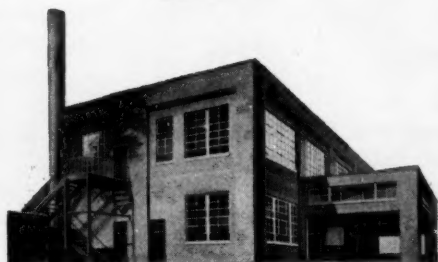
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June 25, 1956

D. Fulton, Esq.,
Vice President,
The Lummus Company Canada Limited,
455, Craig Street, West
Montreal, P.Q.

Dear Mr. Fulton,

It is a pleasure to write to you of the satisfactory operation of the Sulphuric Acid plant at Fort Saskatchewan, Alberta, which your company built for Inland Chemicals Canada Limited last year. The plant is performing successfully, producing specification products over the designed capacity range, even during severe winter conditions such as we had in 1955/1956. The operating costs experienced to date confirm the efficiency of the plant.

We were impressed with the short construction and installation period used by your company, especially since the project was started during difficult climatic conditions early last year. It was also gratifying to see the plant start up and go on stream effectively and without encountering difficulties.

Please extend our thanks to the members of your organization who were engaged in this project.

Yours very truly,

R. Campbell
R. Campbell
President
Inland Chemicals Canada Ltd.

100-ton per day plant built by Lummus for Inland Chemicals Canada Limited went onstream 9½ months after the contract was signed, 7 months after field work began.

This sulfuric acid plant was—

*Finished fast...
started smoothly...
is going fine!*

Winter is rugged at Fort Saskatchewan, Alberta. In spite of it, this \$1,000,000 sulfuric acid plant built there by Lummus was completed well ahead of schedule, and was making specification product within 12 hours of startup.

That was a year ago. Since then this plant has been producing to specification over a range of capacities from 45 to 125% of design.

Why not talk to Lummus before you start your next project?

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ENGINEERS AND CONSTRUCTORS FOR INDUSTRY

Business Newsletter

CHEMICAL WEEK

September 29, 1956

Will 1957 be a good year for the chemical process industries?

The question, of course, can't really be answered fully this far in advance, but there's reason to look ahead with optimism (*see also p. 64*). Take a look at these individual factors:

Sales. At last week's marketing conference sponsored by the National Industrial Conference Board, only the textile picture was painted in anything but rosy terms. Food Machinery & Chemical's A. T. Loeffler, for example, forecast chemical and allied product sales in '57 up 10-15% over this year's \$23 billion. Profits, too, should be up—though probably not by as much, on a percentage basis. Too, Loeffler feels that the chemical industry's fourth quarter will be a "good, strong" one—now that inventories are in better balance.

Similar rosy forecasts were made for petroleum (sales up 4%), steel (up about 4%—to 120 million tons), nonferrous metals (consumption should rise 5-7%).

Capital spending. There are new estimates, too, of some firms' spending plans for new plants—and they're either equal to the record figures or higher.

Where Dow (*CW*, Sept. 22, p. 23) plans to spend \$75 million in the 12 months that began back in June, compared with \$60 million for the previous fiscal year, Du Pont will be spending about \$170 million in '56, up substantially from the \$119 million used for new plants in 1955. Du Pont is investigating possible expansions in nylon and titanium.

Looking ahead to '57, Hercules Powder sees its capital spending program totaling about \$30 million—approximately what it was in '56.

Rohm & Haas, which is spending about \$22 million this year, plans to invest \$33-38 million in new facilities during 1957. Cost of expansions at its Houston plant will take "much" of this total. "Some" of the money will be spent on new units to produce acrylate and methacrylate monomers. How big will the units be? The company isn't talking. But as Treasurer W. T. McClintock told New York security analysts last week, the units are "not necessarily" scheduled to operate at capacity at start-up. Also included in the company's current expansion: units to make acetylene, ammonia and methanol.

Methanol, incidentally, highlights this week's expansions. Es-cambia Chemical will build a 12-20-million-lbs./year methanol plant near Pensacola, Fla. The unit will likely cost about \$2 million. Reichhold Chemicals has signed a long-term contract under which it will buy a large part of the production for conversion to formaldehyde.

And Commercial Solvents will expand its methanol purification facilities at Sterlington, La., "substantially" increasing CSC's methanol

Business Newsletter

(Continued)

facilities there. The company has received a state tax exemption for expansion expenditures of \$5,133,400 which includes cost of the methanol unit, and other expansion.

The optimism shows, too, in new projects. Goodrich-Gulf is currently operating a pilot plant at Akron for low-pressure polyethylene, distributing output to customers. Still under way: engineering studies on a full-scale plant.

Another new project: carbon calcining. Pittsburgh Consolidation Coal Co. and Standard Oil of Ohio have formed Mountaineer Carbon Co., which will operate a 165,000-tons/year calcining unit at Cresap, W. Va., producing electrode carbon material. PCC is already building a carbonizing unit at Cresap to supply fuel for electric power to be used at Olin Revere's abuilding aluminum plant. This carbonizer will supply some of Mountaineer's carbon requirements; Sohio will supply the rest in the form of petroleum coke.

Acquisitions, like new products, reflect business optimism. Procter & Gamble, like Union Carbide (*see p. 23*), is moving into a new field. Though a contract has not yet been signed, P&G may take over Charmin Paper Mills (Green Bay, Wis.) through an exchange of stock. P&G has long been interested in cellulose products (it produces chemical-dissolving pulp and paper-grade pulp at Memphis, Tenn., and at Foley, Fla.), but this would be its first move into cellulosic household products.

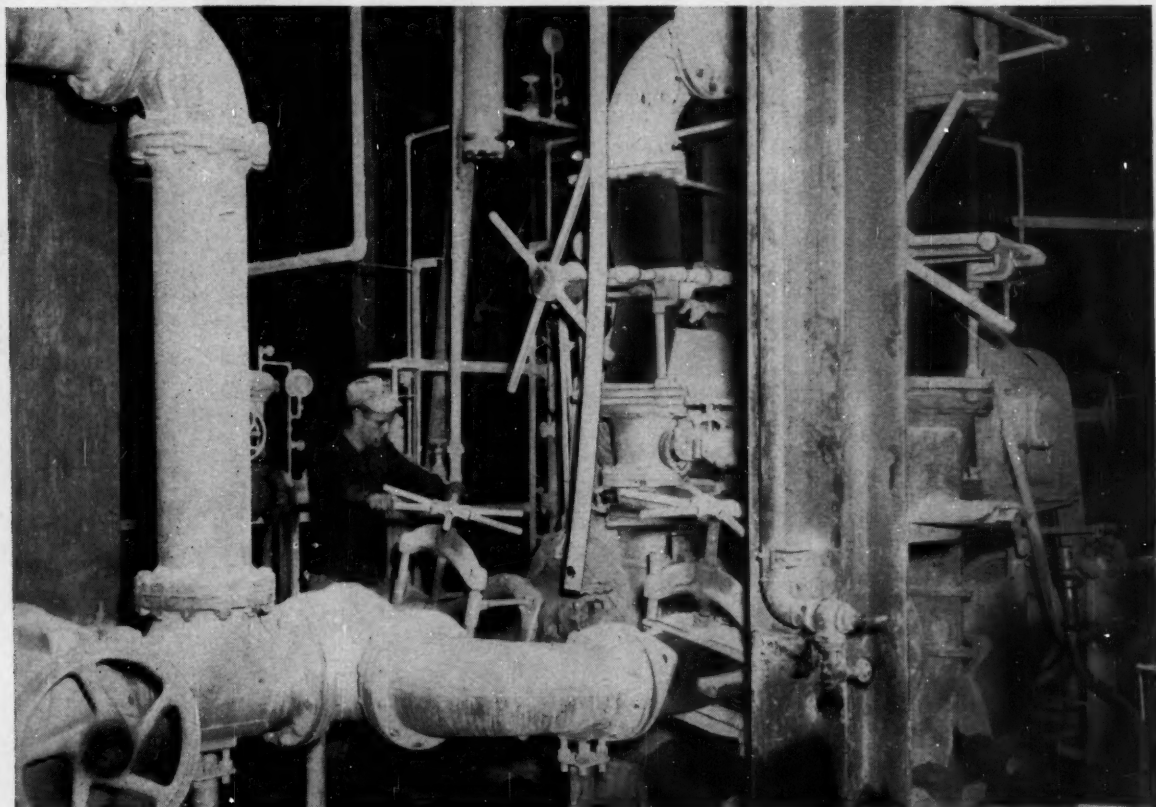
Another acquisition, however, is running into trouble. American Metal had hoped to buy an interest in Sabre Pinon Uranium (*CW Business Newsletter, Sept. 15*), but a group of objecting SP stockholders forced recessing, until this Friday, of the company's annual meeting. American Metal's option on the stock expires on Sept. 30, though it hopes to get it extended. If American Metal doesn't buy the stock, Kerr-McGee, Phillips Petroleum (*see p. 25*) and Anaconda Copper, among others, may make an offer for it. Sabre Pinon controls one of the largest single bodies of uranium ore (5-10 million tons of 0.26% grade).

General Aniline's now planning a stock reclassification to simplify its capital structure previous to the planned sale of U. S. government-held stock in the concern. Under the plan, to be voted on next week, all shares currently outstanding will be changed into a new Class A common. Before any sale, all the government's holdings will be converted into a new Class B, which can be owned only by American citizens.

Shades of Moby Dick! Archer-Daniels-Midland has joined with Peruvian interests to form a whaling company. The new firm, Cia Ballenera del Norte (Northern Whaling Co.), will operate three whale-chasing ships and a whaling station.

"U. S. Pilot Pinch Valves Last Twice As Long..."

says production official of phosphate chemical plant



"And these U. S. Pilot® Pinch Valves," he adds, "don't clog or freeze — they are made of rubber. They don't require the babying of metal valves — and they play a major part on our production." Although the life expectancy of these "U. S." valves is twice that of metal valves they cost less to install.

This phosphate plant, located in Florida, manufactures animal food supplements and fertilizer. It is in operation 24 hours a day, 7 days a week. In this rugged round-the-clock routine, "U. S." products have proved economical and highly satisfactory. To control, pipe and connect the highly

corrosive and erosive semi-solids handled in the plant, U. S. Giant® Acid Hose, U. S. Expansion Joints and U. S. Pilot Flexible Pipe are used. The plant's officials have found that U. S. Rubber products are unmatched in facilitating production and in reducing maintenance and equipment charges. They have standardized on "U. S." products. It will pay you to take any and all corrosion problems to a "U. S." specialist.

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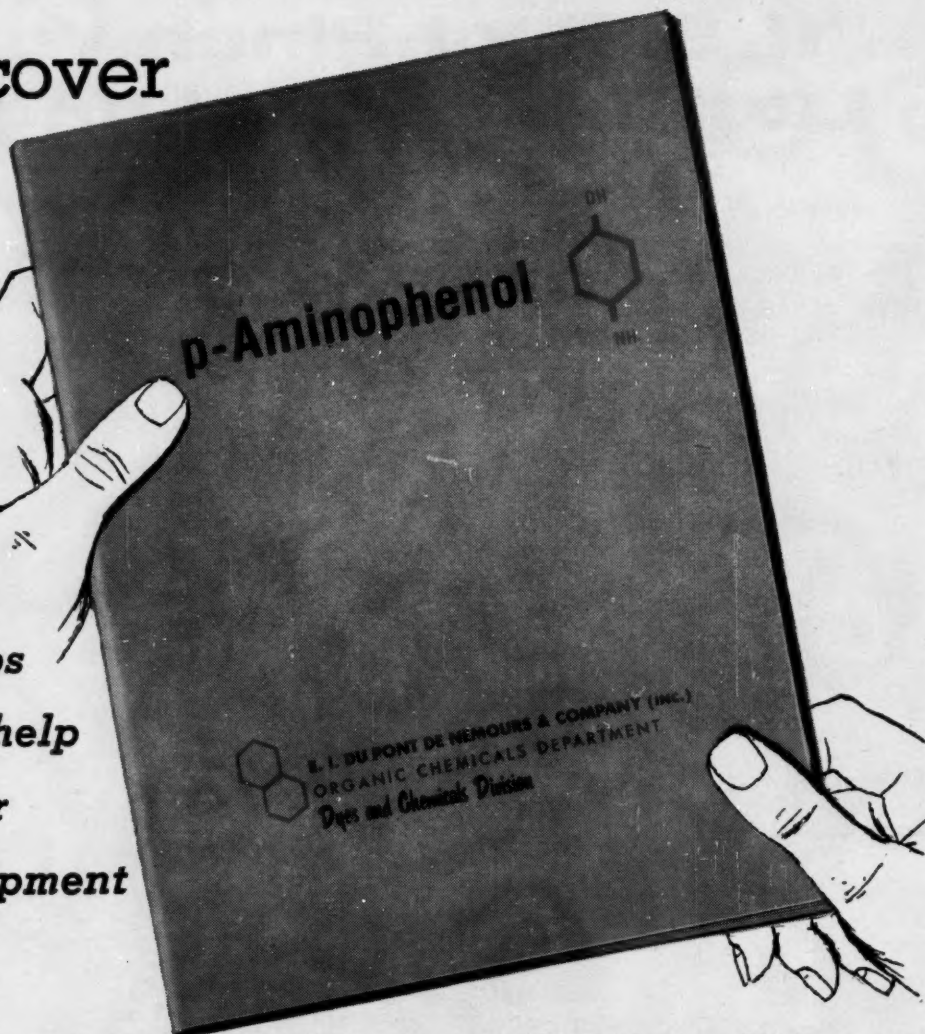


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Chemists are constantly finding new, profitable uses for Du Pont p-Aminophenol as an intermediate for new synthetic chemicals—such as photo developers, anti-oxidants and analgesics. To help you evaluate this highly reactive intermediate, Du Pont has prepared a booklet on the properties, reactions, derivatives and uses of p-Aminophenol.

Here are a few typical reactions. PAP reacts:

With Methyl iodide to produce p-methylaminophenol

With NaClO in dilute HCl solution to produce N-chloroquinonimine

With KClO_3 to produce Chloranil

With $\text{CH}_3\text{CO}_2\text{H}$ to produce 4-hydroxyacetanilide

With oxalic acid to produce 4,4'-dihydroxyoxanilide

With formaldehyde to produce polymeric p-(methyleneamino)-phenol

WRITE US TODAY for a copy of this booklet. Address: E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Dept., Chemicals Div., Wilmington 98, Del.



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

**ORGANIC
CHEMICALS DEPARTMENT**

Getting Together on Offshore Sulfur

TWO YEARS of speculation were ended last week when Humble Oil and Freeport Sulphur signed a contract under which Freeport will mine the major sulfur dome discovered by Humble back in 1954 six miles off the Louisiana shore.

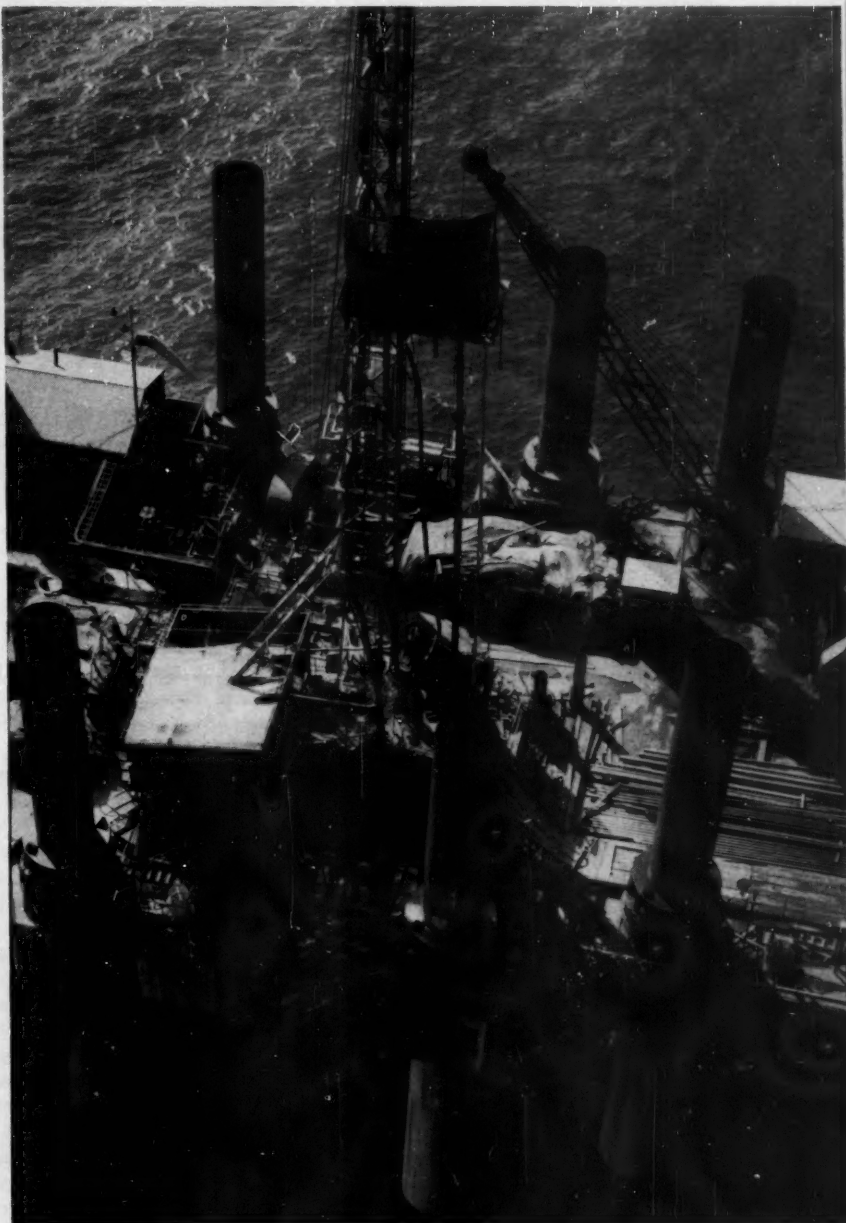
Under the agreement, signed in New York last Wednesday, Freeport will pay basic royalties of one-sixth of the revenue to the federal government. It will pay Humble royalties large enough that, after taxes, the two firms will each get about half of the net profits.

Humble officials last year estimated that the deposit—technically known as Grand Isle Block 18—contained 30-40 million tons of sulfur. The agreement also involves rights to two other nearby offshore domes, Grand Isle Block 16, where a commercially exploitable deposit has been proved, and West Delta Block 30, where Freeport will continue prospecting work begun by Humble.

Sea-Water Technique: Actual construction of a Frasch-process extraction unit must be started within two years, with completion expected to take about two more years. The technical problems are substantial; a large plant to superheat sea water will be built on a steel structure tall enough to be above reach of storm waves on the Gulf of Mexico—like those of Hurricane Flossie which hit Louisiana's coast near Grand Isle on Monday.

Freeport, currently operating three extraction units in nearby Louisiana's coastal marshes, has developed the technology of using sea water in Frasch extraction.

Since it will be impossible to store sulfur at the offshore location, another Freeport development—barge transportation of molten sulfur—will be used to transfer the Grand Isle production to the company's Port Sulfur, La., storage and shipping point on the Mississippi River. The barges will return with fresh water needed for boiler makeup and miscellaneous uses.



SULFUR EXPLORATION in the Gulf of Mexico is continuing. Exploratory wells sunk from this barge established existence of Grand Isle dome.



SOCMA'S FASOLI: For U.S. producers, all the aid the law allows.

At Issue: Tariff Levels

Every year without fail, there are Rose Bowl festivities in Pasadena, a Mardi Gras celebration in New Orleans, and Congressional tariff hearings in Washington. This last tradition is usually less decisive than the other, sprightlier rites.

A tariff hearing is under way now, conducted by a House of Representatives Ways and Means subcommittee headed by Rep. Hale Boggs (D., La.); and as usual, the chemical industry is prominent in testimony from witnesses with conflicting recommendations.

Cited for Strength: Boggs' committee is getting diverse opinions as to the chemical industry's vulnerability in international competition, with an early witness assuring the committee that this industry is strong enough to withstand the competitive impact of foreseeable imports.

The witness—Prof. Seymour Harris, chairman of Harvard's Dept. of Economics—asserted that the chemical industries "are tough babies to deal with." And another Harvard professor

—Dean Edward Mason of the School of Public Administration—suggested that chemical manufacturing (except small batch process operations) might be one branch of industry in which it would be possible to encourage imports without setting off domestic repercussions. But both Harris and Mason specified that Congress should be very selective in making any tariff reductions.

Only chemical industry voice at the hearing was that of Hooker Electrochemical's R. W. Hooker, who is president of the tariff-conscious Synthetic Organic Chemical Manufacturers Assn. Hooker, however, was invited to testify as an individual and not as a company or association representative.

While Hooker made clear his conviction that the U.S. needs a tariff program to keep its chemical industry from being "eclipsed" by foreign rivals, his 42-page presentation was mainly a detailed analysis of the workings of the 1955 reciprocal trade act. One sugges-

tion: that the Office of Defense Mobilization be given more say-so in determining defense essentiality.

... And

While future tariff policy is being re-argued in Washington (left), chemical companies are helping to make present laws more effective.

This new step to protect U.S. producers against increasingly intensive competitive efforts on the part of foreign chemical concerns is being taken under the sponsorship of Synthetic Organic Chemical Manufacturers Assn., and it applies to coal-tar intermediates.

Two years ago, SOCMA's customs committee—then and now headed by American Cyanamid's Col. John Fasoli—cooperated with the U.S. Bureau of Customs and with chemical importers in setting up a system of data cards and samples to help customs agents identify imported coal-tar finished products (*CW*, Oct. 9, '54, p. 13).

Nonmembers Included: Now, Fasoli's committee has arranged for a similar system that will cover the intermediates from which the dyes, pharmaceuticals and other coal-tar finished products are made.

To member companies and non-members alike, SOCMA will furnish blank data cards without charge. Each domestic producer in this field will submit data on the intermediates that are important to his business. Customs will keep this information in a confidential file, using it only to determine which coal-tar imports are competitive with domestic products—and hence should be taxed on U.S. selling-price basis, rather than on invoice or foreign price.

Bureau Is Willing: While the Customs Bureau was directed to set up a data file on coal-tar finished products, the agency is going into this second phase on its own volition.

The new move appears to be a logical extension of the earlier plan, seeing that a coal-tar intermediate—if imported into this country under a new tradename and not identified as a competing product—could be processed into various finished products that might be sold here at prices unburdened by the tariff increment that the domestic industry is counting on as an "equalizer" for coal-tar imports.

Push into Packaging

This week, plastics and packaging executives are assessing the impact of one of the biggest prospective mergers in their fields in quite some time.

Union Carbide and Carbon has agreed to acquire Visking Corp. through an exchange of one share of Carbide stock for each 2½ of Visking. Based on the selling price of Carbide stock just before the announcement, Carbide will give Visking stockholders shares worth \$102 million. These shares presumably would come from those currently authorized by Carbide stockholders but not yet issued. Before Carbide can acquire the cellulose and polyethylene film producer, however, Visking stockholders will have to approve the deal. A special meeting of the firm's stockholders has now been scheduled for Dec. 1.

How Significant? The move, which should lead to the merger of the largest producer of polyethylene resin and the largest producer of polyethylene film, is of obvious significance to Carbide: it puts it into the booming polyethylene film business and further into the over-all flexible film picture (*CW*, June 3, p. 90). Union Carbide, through its Bakelite Co., has been a prime producer of flexible (and rigid) vinyl films, in addition to resin. This move brings it even closer to consumer markets.

Carbide, of course, is not the first producer or potential producer of polyethylene resins to get into films. Koppers recently bought Durethane, third-largest film producer. (It has just dissolved the corporation, bringing its activities into its Chemical Division.) Celanese, too, manufactures polyethylene film.

Customer Competition: Could this move by the largest resin producer make some of its current customers look elsewhere for their resin requirements? The best answer one can get is that if all other factors—such as price, quality, broadness of line—are equal, such a merger means some loss of business. Clearly, however, Bakelite does not consider this to be the case. Certainly, the company's sales to vinyl film makers have not been hampered by its sales of films. Instead, the entire market has expanded considerably.

Too, Carbide will be acquiring patents that Visking feels have given it

quality and cost advantages. And Visking's know-how on cellulose casings could be valuable if Carbide were to go into the manufacture of cellulose films.

But above all, for Carbide, the prospective acquisition of Visking will mean a substantial entry into the entire packaging field, a field for which, through production of raw materials, it could be particularly well suited.

Powerless Pacific

Chemical process companies in the Pacific Northwest are girding again this week for the annual power imbroglio stemming from power curtailments caused by water shortage.

Bonneville Power Authority Administrator William Pearl has warned 13 industries, among them makers of

aluminum, metals, chemicals and paper, to be ready for a complete cut of interruptible power by Oct. 1. Critically low water because of subnormal June-August precipitation has forced the move. At best, says Pearl, half the interruptible loads will have to be cut "even if streamflows recover to median. Only regionwide sustained and continuing rains can alleviate the situation."

Electroprocess industries are being advised now so they can make arrangements for other power resources such as steam generation and provisional supply from the Hungry Horse Dam storage.

Companies affected include Alcoa, Kaiser, Reynolds Metals, Electro-Metallurgical Co., Pennsalt, Crown Zellerbach, Rayonier, Victor Chemical, Carborundum Co., Anaconda Aluminum, Pacific Carbide and Alloys, Keokuk Electro-Metals, and Pacific Northwest Alloys.

Taken—a Giant Step

Another important step toward solving air pollution problems in the San Francisco Bay area has been taken. Directors of the bay-area pollution control district have chosen an administrative control officer of the new district. He's Benjamin Linsky, who was selected from a field of 47 applicants.

Forty-five-year-old head of Detroit's smoke abatement bureau and president of the National Air Pollution Control Assn., Linsky will assume his duties Oct. 1. His job: to translate what is essentially a new approach to air pollution control into workaday practice.

Set up by enabling legislation passed during the last regular session of California's legislature in the spring of 1955, the district is unusual in at least two respects: (1) it's a multi-county air pollution control body, embracing six of the counties that surround San Francisco Bay; (2) three counties are eligible to join later.

And unlike California's individual county control districts—most notably that of Los Angeles County, which was established under previous enabling legislation—the new district has authority to cross county lines in search of manufacturers that may be

offending the pollution control laws.

Too, the basic philosophy behind the district's control procedures differs radically from the guiding philosophy (*CW*, June 25, p. 41) of its sister organization to the south. In Los Angeles, plant designs must be approved by the air pollution control district—and even then approval means nothing if the district subsequently finds the plant discharging pollutants. But in the San Francisco Bay area, only the nature, composition and extent of actual effluents need be registered with the district. Moreover, where the Los Angeles district assesses punitive fines, the San Francisco Bay area district, through court action undertaken by a county district attorney, will attempt to close an offending plant. It will, however, first give the plant a public hearing at which to present its case—as well as sufficient time to correct violations.

Clean or Close: Linsky thus will have the job of enforcing a "clean up or close up" program. Odds are he'll succeed, because industry, unencumbered by the apparently arbitrary design dicta and punitive injunctions used in Los Angeles, is actively supporting the bay area district's approach.



Argument on the Boardwalk

Atlantic City's boardwalk was the locale last week of well over 10,000 salt-water-taffy-chewing chemists attending the 130th American Chemical Society meeting. Though the soft whisper of the waves—and the tooth-sticking qualities of the taffy—made arguments unlikely, a family fight was again brought out into the open.

It blossomed in the speech by James Bradshaw Mintener, retiring assistant secretary of the Dept. of

Health, Education & Welfare. The question: whether or not the American public is being subjected to untested and unsafe chemical food additives.

This question—once the subject of a hot debate between the chemical industry and government officials—had been put aside with the adoption in the industry's proposed food additive control law of mandatory pretesting of such additives. (Previously, industry position had been that all

reputable additive makers tested their products—thus, a law with such a provision was unneeded.)

But it was resurrected with a vengeance. Said *New York Times* science savant Bill Laurence in reporting a speech by Mintener:

"Scientists of the Food & Drug Administration are agreed that 150 out of 400 chemicals now used as food additives have not been adequately tested to determine whether they are safe for human consumption."

And though FDA scientists in Washington insist that the tabulation was made for Mintener's use, the figures are approximately those contained in an earlier report by the National Academy of Sciences, which industry representatives felt was misleading on the grounds that many of the materials mentioned weren't, and aren't, in common use.

Whatever its other results, however, Mintener's speech is one more piece of pressure for Congress to enact some sort of a food additive control law.

Other Highlights: But many of the chemists who came to Atlantic City were not interested in food additives. To some 450 of them, the employment clearinghouse was a major target. At this meeting, there were two jobs for every looker—over 900 job openings were listed.

Air pollution problems, too, caught the attention of many. One possible new development—use of detector crayons to chart the presence of problem gases. Up to now, main work on these lines has been with war gases.

Chemical Poser: Wildcat Jersey Truck Strike

The New Jersey truck strike—idling some 3,000 truckers in highly industrialized Union and Essex counties—is now beginning to pinch chemical companies in the area. An early settlement appears unlikely.

The strike—labeled by Dave Beck, Teamsters president, as "a big mistake"—is the result of a dispute that

earlier involved more than 300 trucking firms in New York and New Jersey and 10 International Brotherhood of Teamsters locals. Nine IBT locals agreed to the proposals offered by the management group, but the tenth—local 478, located in Newark—held out and the walkout was called. The settlement calls for an 11¢/hour wage increase, with additional payments to the welfare fund and a two-year agreement without a reopening clause.

Linde Air Products Co., a division of Union Carbide and Carbon (New York), has experienced some picketing of its Newark plant, and at last report

no trucks were allowed to enter or leave the plant.

A reluctance by out-of-state terminals to handle freight to and from the strike-bound counties has been reported, and there has also been increased use of less-than-carload rail shipments. The Pennsylvania Railroad has reportedly placed an embargo on Union County. Merck Chemical (Rahway, N.J.) says that a "truce" has permitted shipments of drugs, chemicals and medicines to pass unmolested. And as the strike progresses, chemical companies in the area become increasingly more fearful of a walkout already considered by many as crippling.

Washington Angles »

» **Watch the Southern railroads** in the latest move to put through another hike in freight rates. Eastern and Western rail carriers, after a strategy meeting last week, announced plans to seek a 15% rate boost from the Interstate Commerce Commission. Southern rail executives attended the meeting—but refused to endorse the increase.

However, the Southern group has been the last to join previous drives to boost freight rates, and may well support the formal request when it's filed.

ICC, which granted a nationwide 6% boost last spring, is almost sure to whittle down the request.

» **Food & Drug Administration is resisting** pressures to drag it into the fight between drug trade groups on the issue of banning sale of non-prescription medicines by supermarkets and other stores not employing registered pharmacists. Three leaders of the pharmacy trade have quietly tried to enlist FDA on their side in recent months, but have been turned down.

Meanwhile, their rivals—the manufacturers of proprietary drugs—are filing new suits to test restrictive state laws that limit their retail outlets to regular pharmacies.

» **Barter contracts** exchanging government-owned farm surpluses for foreign-produced strategic

materials are on the rise. Latest figures, reported by Commodity Credit Corp. last week, showed \$101 million in barter contracts in the April-June quarter, compared with \$215 million negotiated in the previous nine months. Among strategic materials received in exchange for surplus U. S. crops were fluorspar, cadmium, rare earths.

» **Chemical plants using water** from public streams have an important stake in the fast-growing challenge to the traditional "riparian rights" water-use doctrine in states east of the Mississippi River. Industrial and urban growth pressures on Eastern water supplies have sparked a trend—the biggest thing in the water field today, federal officials say—to extend the West's "prior appropriation rights" doctrine eastward.

That gives prior stream rights to whoever first appropriates the water for a beneficial use—including the right to stake out larger water supplies for future expansions.

» **The President's Commission** on Increased Industrial Uses of Agricultural Products last week picked its executive director. He's Wheeler McMillen, chairman of the Council for Agricultural and Chemurgic Research (formerly the National Farm Chemurgic Council). The five-member commission heard detailed proposals for new research projects from the corn, distilled spirits and textiles industries and will hear other groups before recommending legislation or other measures to broaden industrial uses of farm goods.

EXPANSION

Chlorine Products: Dow will boost its already-committed investment from \$20 million to \$50 million in the abuilding Plaquemine, La., chlorine products plant. The plant will make chlorine, caustic soda, glycols and oxides of ethylene and propylene, chlorinated solvents, vinyl chloride, hydrochloric acid.

• **Shawinigan Chemicals Ltd.** will build a caustic soda and chlorine producing plant of undisclosed cost and capacity at Shawinigan-East, Que. Though most of the chlorine will go into internal operations, the caustic soda will be sold to the pulp and paper industry.

• **Uranium:** Phillips Petroleum is acquiring full interest in uranium leaseholds in New Mexico, is negotiating with AEC for uranium processing contracts to take advantage of a new 1.5-million-ton high-grade ore body.

Cement: Ideal Cement will boost capacity of its Okay, Ark., cement plant 30%—to 2 million bbls./year. Construction on the \$2-million project will start in October.

COMPANIES

Flinkote Co. has purchased the assets of U.S. Lime Products Corp. through acquisition of 98% of U.S. Lime's stock for an undisclosed amount of cash.

• **Cosden Petroleum Corp.** will purchase Col-Tex Refining Co. from Anderson-Prichard Oil Corp. and Standard Oil Co. of Texas. The transaction will be accomplished by the transfer of 350,000 shares of Cosden common stock, currently valued at about \$7.65 million.

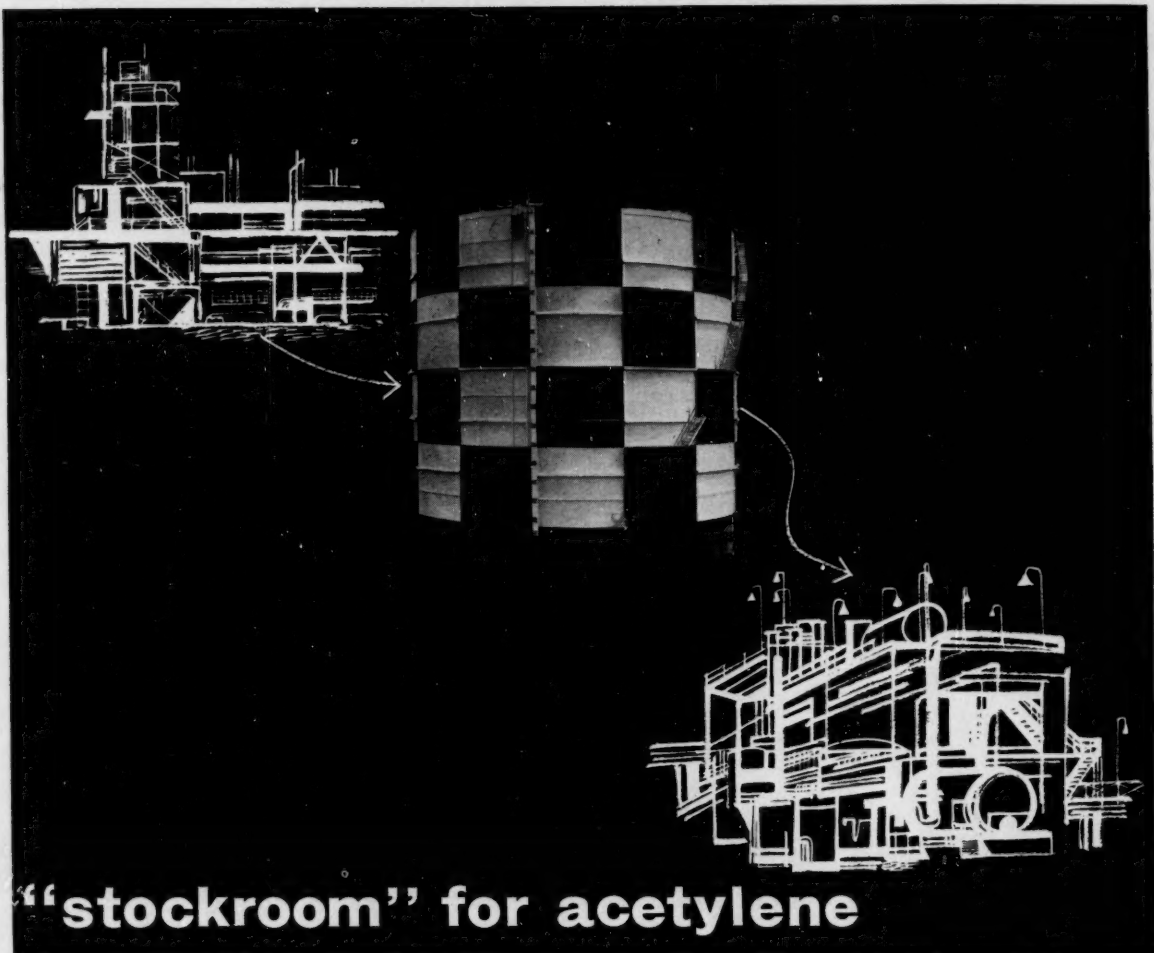
• **Dayton Rubber Co.** has declared a 20% stock dividend to holders of record Nov. 5, 1956.

FOREIGN

Naval Stores/Mexico: Hercules Powder, through acquisition of stock in Corbu Industrial, S.A., will begin wood naval stores manufacturing in Mexico. Corbu will build a 25-million-lbs./year naval stores plant near Ciudad Hidalgo to produce rosin, turpentine, pine oil, other terpene chemicals.

• **Formic Acid/Brazil:** Brasimet Comercio Industria S.A., part of the Hotschild interests in Brazil, will build a new formic acid plant near Sao Paulo. Present production target: 1,000 tons of formic acid and 2,000 tons of sodium formate per month. The plant will cost about \$750,000.

• **Lithium/Spain:** Lithium Corp. of America has received a permit from the Spanish government to own 40% of a new company to be formed jointly with Spanish Titania S.A.



“stockroom” for acetylene

Linde purchases Wiggins Gasholder for storage of acetylene between production and use cycles

When Linde Air Products Company's new acetylene plant in Montague, Michigan goes "on stream", a new 100,000-cubic-foot Wiggins Gasholder will play a vital role in the operation. Every cubic foot of acetylene produced will pass through the "stockroom" on its way to DuPont for use in the production of Neoprene. The gasholder will provide acetylene storage and will serve as surge capacity to enable Linde to satisfy both normal and emergency requirements.

If you produce, store or use gases, investigate the advantages of Wiggins Gasholders. They can be built to any capacity—from 50-cubic-feet to a million. Call or write General American for complete information.



GENERAL AMERICAN TRANSPORTATION CORPORATION

*135 South La Salle Street, Chicago 90, Illinois.
Offices in Principal Cities*

Charting Business

CHEMICAL WEEK

September 29, 1956

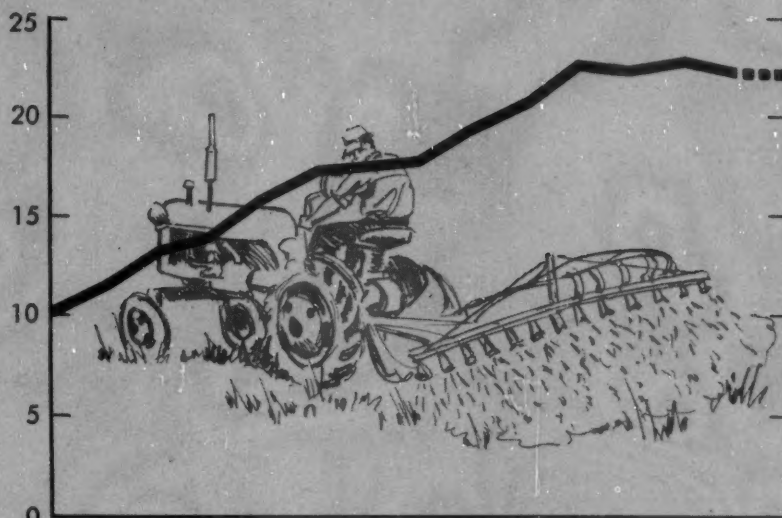
FARM INCOME AND FERTILIZER BUYING . . .

Growing less akin

U. S. Fertilizer Consumption

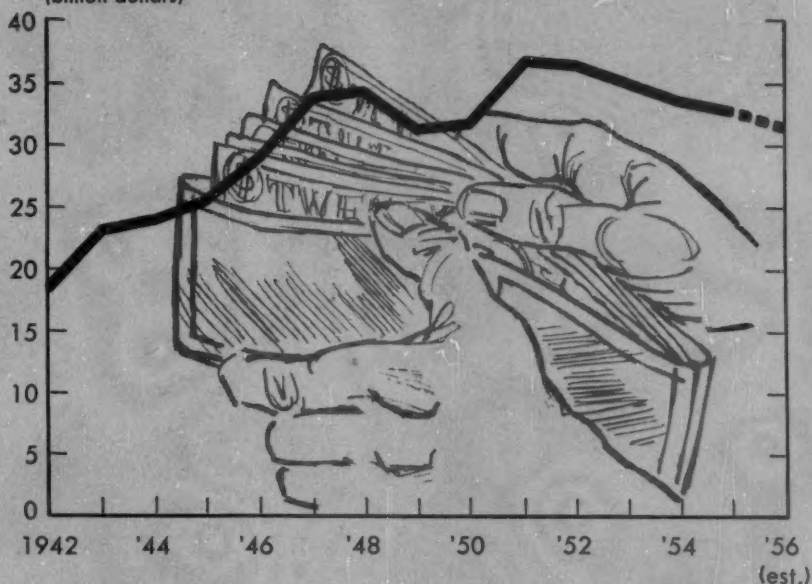
(100,000 tons)

Source: U. S. Dept. of Agriculture.



Realized Gross Farm Income

(billion dollars)



DECREASING farm income is having less and less effect on the chemical industry. In the past, farmers cut their spending for fertilizers and pesticides when money became scarce. Today, such parallelism in fluctuation of farm income and fertilizer consumption is

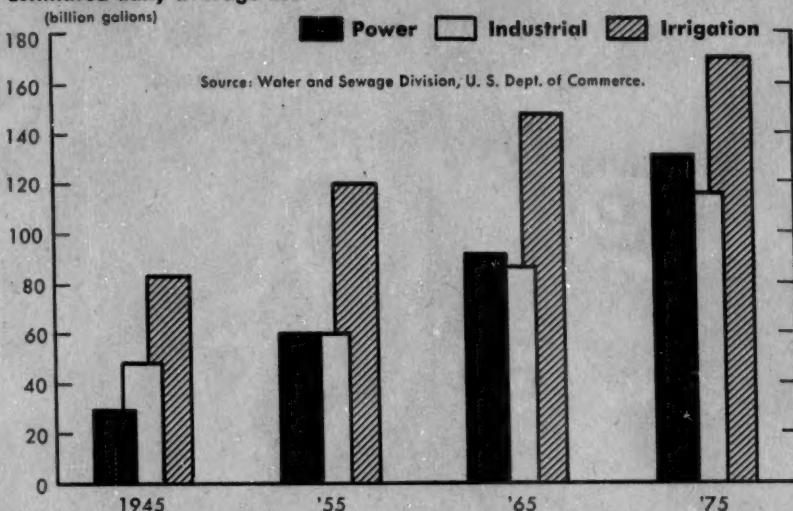
less apparent. Reason (according to the U.S. Dept. of Agriculture): farmers have become more aware of the necessity of renourishing their land; consequently, they're expected to keep up their investments in fertilizers (while they pinch their spending for other things).

Charting Business

(Continued)

WATER: Despite Short Supply, Consumption Will Surge

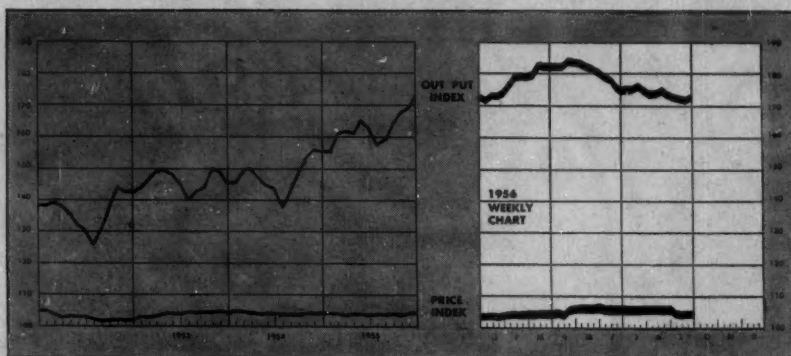
Estimated daily average use



WATER consumption, which has quadrupled since the turn of the century, is expected to be double today's level by 1975. And industry, today second only to irrigation as a consumer of water—it will use and re-use (as much as 50%) 13 billion gal. in '56—is greatly con-

cerned over recent water shortages. Particularly affected among the chemical process industries: chemicals, petroleum, pulp and paper, metals. The chemical industry alone used some 2.9 trillion gal. of water in '55 and that volume is slated for a 50% increase in 10 years.

BUSINESS INDICATORS



WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100)	174.2	173.5	165.1
Chemical Week Wholesale Price Index (1947=100)	105.5	105.4	104.2
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	448.9	465.2	488.3

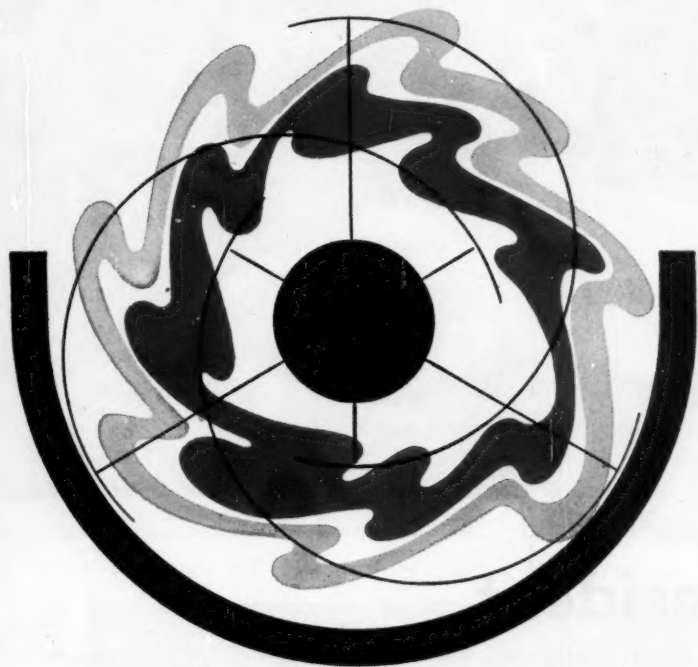
MONTHLY

Wholesale Prices (Index 1947-1949=100)	Latest Month	Preceding Month	Year Ago
All Commodities (other than Farm and Foods)	122.4	121.4	117.5
Chemicals and Allied Products	107.3	107.3	105.9
Industrial Chemicals	122.1	122.1	118.1

Eastman NP-10 gives you

- Faster compounding
- Excellent permanence
- Lowest color

New Polymeric Plasticizer speeds vinyl production



Eastman
CHEMICAL PRODUCTS, INC.
KINGSPORT, TENNESSEE
subsidiary of Eastman Kodak Company

In selecting a polymeric plasticizer, vinyl compounders need compromise no longer between desired permanence characteristics and the rate at which such plasticizers can be compounded. Heretofore, permanence characteristics of available polymeric plasticizers have been a function of their molecular weight—with the high molecular weight compounds providing the best in permanence properties. On the other hand, as molecular weight increases, activity decreases, and hence production rates fall.

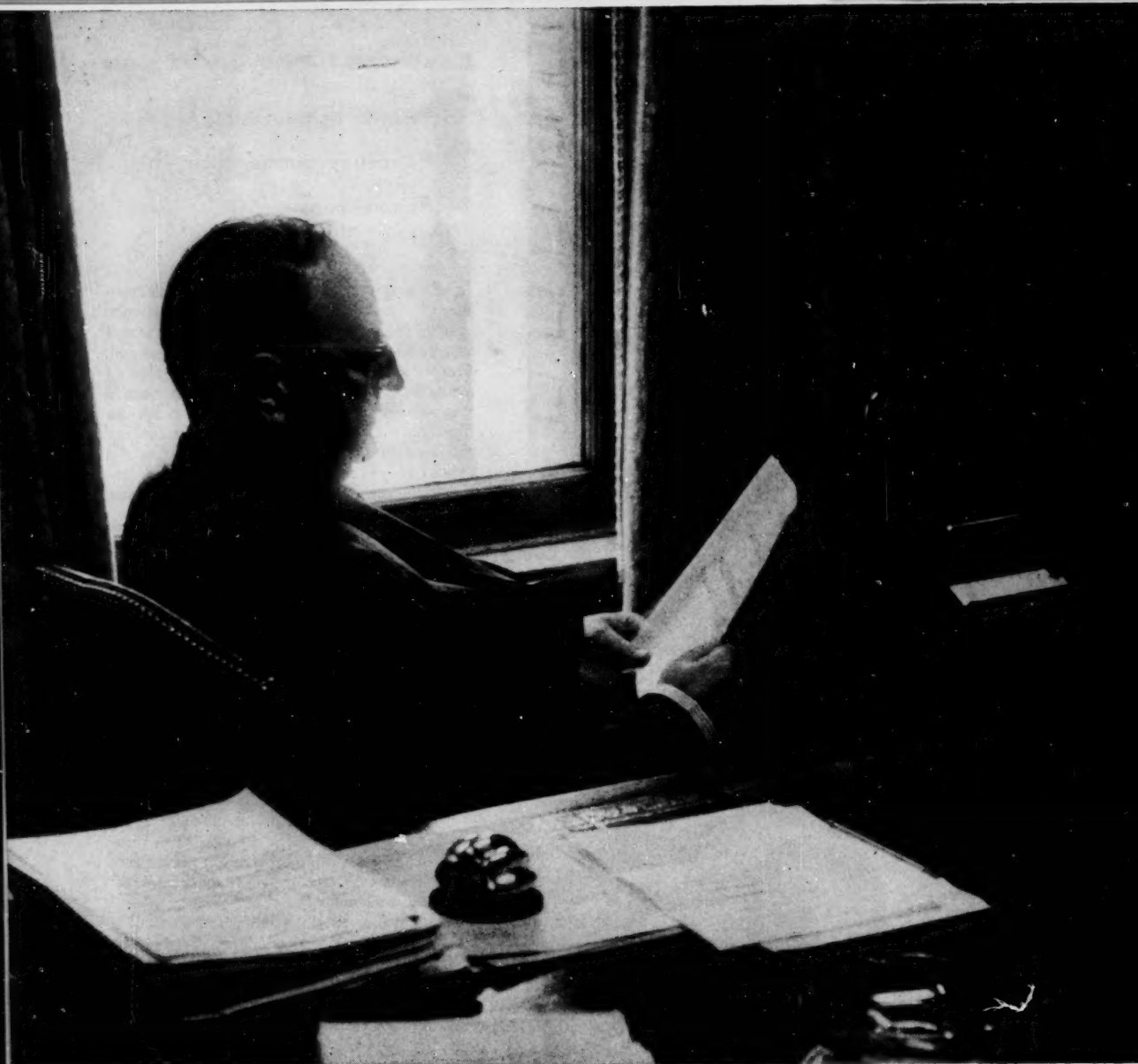
It is here that Eastman's new Polymeric Plasticizer NP-10 makes its greatest contribution. It exhibits the superior permanence properties of the higher molecular weight materials, yet is itself a compound of relatively low molecular weight. As a result, vinyl compounders can use NP-10, without modifiers, to achieve superior permanence while maintaining efficient production schedules. There's another dividend, too—Eastman Polymeric Plasticizer NP-10 has an APHA color rating of less than 100, a "first" in the field of polymeric plasticizers.

Key to this Eastman development is the use of neopentyl glycol as a base. Unusually stable due to its uniform chemical structure, neopentyl glycol produces polymeric plasticizers which possess outstanding permanence at only moderate molecular weights.

Eastman Polymeric Plasticizer NP-10 is a clear viscous liquid. It is highly resistant to hydrolysis, and thus can be expected to remain unaffected by moisture under the most severe outdoor weathering conditions. It produces vinyl films of excellent low-temperature flexibility. Its loss from vinyl films to hydrocarbons, soapy water and activated charcoal is extremely low, thus ensuring complete plasticization throughout the life of the plastic material. As a vinyl plasticizer, Eastman Polymeric Plasticizer NP-10 shows little tendency to migrate to materials with which such vinyls might come into contact. In addition, tests have shown it to produce excellent organosols and plastisols.

For superior permanence coupled with easier and faster processing, investigate Eastman Polymeric Plasticizer NP-10. Write for a copy of our brochure describing this unique new plasticizer. EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; New York City; Framingham, Mass.; Cincinnati; Cleveland; Chicago; St. Louis; Houston. **West Coast:** Wilson Meyer Co., San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.



Profile of a President

It's not unusual, when you look in the always-open door of his sixth-floor office in Kansas City's Dwight Building, to see this profile of Kenneth Aldred Spencer. For the engineer-president of Spencer Chemical Co. and Pittsburg and Midway Coal Mining Co. often sits in this position when he's thinking.

"When I have a tough problem to decide," says Ken Spencer, "I often look up at my father's picture there by the window and try to reason out what he would have done. Then I just think

about it. Funny, I didn't realize I sit this way so often."

But Ken Spencer's penchant for sitting and thinking has been a rewarding one. In the 10 years since he founded Spencer Chemical, it has come from a firm with \$46,000 in physical assets to one with property worth \$45 million. Its sales, for the fiscal year that ended last June: \$46 million.

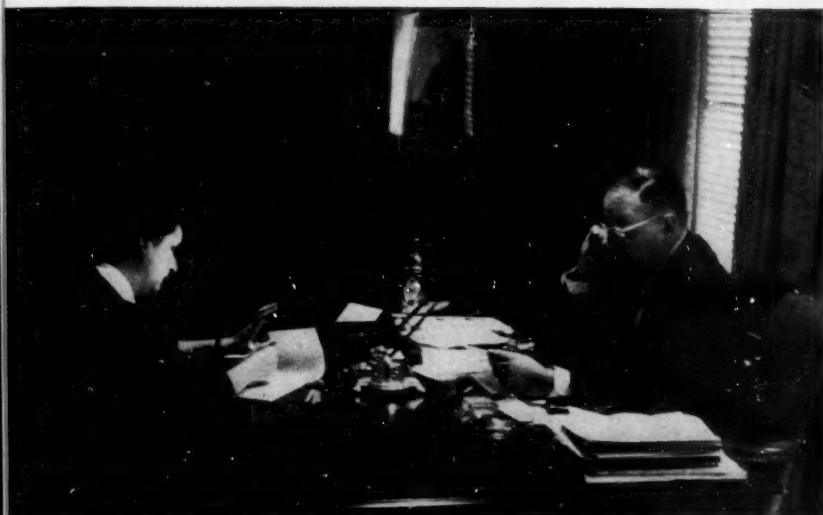
Last week, Spencer gave his final approval to the company's plan to enter a new field—that of nylon-6 molding materials (*CW Business Newsletter*,

Sept. 22). And though the company's currently planned nylon investment is small—less than \$2 million—it demonstrates a further push into plastics and away from a dependence on agricultural sales of fixed nitrogen products.

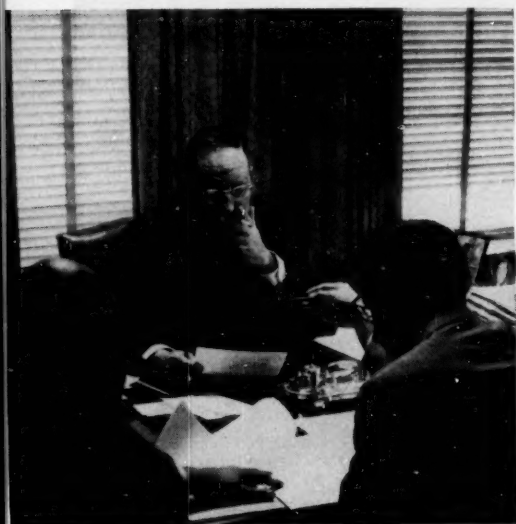
Why did Spencer decide to enter nylon plastics? What are its future plans? You can get the best answer by looking at how Ken Spencer runs his company.

When you ask associates why Ken Spencer has gotten where he has, they come up with a variety of answers.

ADMINISTRATION



The day begins as Ken Spencer dictates a morning's worth of mail, and writes himself reminder notes.



A personnel policy conference follows, then a talk on coal hauling with a Katy railroad traffic man.



While on his way to lunch, Spencer stops to check the company's stock quotation at a broker's office on the ground floor of the Dwight Building.



Spencer lunches with Vice-Presidents John Miller (left) and Joseph Culpepper. Then they have a planning session with Vice-President "Kip" Thomas, R&D Manager John Brown.



ADMINISTRATION

But two stand out: his willingness to take chances—call them, perhaps, calculated risks—and his ability to get along with a wide variety of people.

How Much Risk? In hindsight, it can be argued that the risks Spencer took in its early days were ones with a pretty good chance of success. For the first 8½ years of its existence, there was a seller's market for the company's main product, ammonia. Too, one can give much credit for Spencer's entry into polyethylene production to Federal Judge Sylvester Ryan, who ordered Imperial Chemical Industries to license its patents and know-how. Nonetheless, such decisions as the one made at the end of World War II to lease the government's ammonia facilities at what was then the Jayhawk Ordnance Works, and the decision to enter polyethylene in the face of competition from such well-established polyethylene producers as Du Pont and Carbide, and such other broad-range plastic makers as Dow and Monsanto (*CW*, July 18, '53, p. 14) did take courage.

But they paid off. The polyethylene gamble, as a move to diversify out of agricultural chemicals, was noteworthy.

Of Spencer's current \$46 million/year sales, about half is now nonagricultural. And, after subtracting sales of such chemicals as formaldehyde and methanol, the largest part, by far, of the remainder is in polyethylene sales.

Top Level: Helping Ken Spencer with his decisions is a top-level management committee (*picture, far lower left*). This group meets twice a month for a day-long exploration of the company's major problems. Among the group's responsibilities: projection of plans up to 10 years ahead. Members are the top men in finance, sales, operations and research and development.

The second level executives are organized into the operating committee, which meets weekly. Spencer's assistant, Gene Friedrich, who acts, informally, as secretary to the management committee, heads the operating group.

The groups usually have specific responsibilities, with little overlap. But there are times when each committee takes up something in the other's bailiwick. Since Spencer is still a relatively small company, such segregation is perhaps not too important. Too, the committees have been in formal

existence for only about one year.

No formal vote is taken in the groups—usually, a problem is solved when the group comes to a consensus.

"One thing I've noticed," reports an associate, "if someone interrupts a committee discussion with a joke, or gets off the point somehow, the boss often has trouble following it. His mind stays on a subject, I guess, until a decision has been reached."

Such one-mindedness could be a main factor in Spencer's successful decisions. It may well be the key to unexpected moves—such as when technical and sales personnel who knew ammonia were trained in polyethylene technology.

As a result, Spencer hired very few new employees to get into production of the material. The company's development of high-density polyethylene came from this group.

Too, the current decision to concentrate on producing caprolactam polymers for extrusion uses is a move away from the normal routine. If it proves successful, Spencer will have taken another profitable diversification away from agriculture.



Spencer chats with Winthrop Rockefeller (right) at a Midwest Research Institute reception.

Finally, a time check to be sure that he's home to meet a group of dinner guests.



Fatty Acid Esters

Laurates
Oleates
Ricinoleates
Stearates

of

Diethylene Glycol
Ethylene Glycol
Glycerine
Methanol
Propylene Glycol

used as

Anti-Foam Agents
Anti-Tack Agents
Emollients
Emulsifiers
Lubricity Additives
Mold Release Agents
Stabilizers
Thickeners
Wetting Agents

For more information, write . . .

CW
carlisle
CHEMICAL WORKS, INC.
READING, OHIO

manufacturers of
fine industrial chemicals

ADMINISTRATION



JUDGE SUGARMAN: Without irreparable injury, no restraining order.

LEGAL

Antitrust Vigilance: Apparently, the Justice Dept.'s new chief trustbuster, Victor Hansen, plans no letup in his predecessor's zealous campaign against antitrust violations. Latest maneuver: a motion—denied by Federal Judge Sidney Sugarman in New York—to block a proposed merger labeled by Hansen as a threat to competition in the container industry and a violation of the Clayton Act.

Judge Sugarman—in denying the Justice Dept.'s motion for a temporary restraining order—ruled that the government had not shown how it would suffer immediate and irreparable injury, loss or damage if the proposed acquisition of Hazel-Atlas Glass Co. (Wheeling, W. Va.) by Continental Can (New York) were not blocked. "Should the acquisition be ultimately held violative of the Clayton Act," the judge added, "plaintiff's relief may be accomplished by a decree of divestiture."

The government describes Continental—which has acquired 25 independent concerns since 1952—as the second largest manufacturer of metal cans in the country, and Hazel-Atlas as the nation's largest manufacturer of wide-mouth glass bottles and the second biggest producer of glass containers.

Promotional Allowances: The Federal Trade Commission has settled the last of five complaints brought against

cosmetic manufacturers alleging violation of the Robinson-Patman Act through the granting of preferential promotional allowances to favored retailers.

Revlon Products (New York) has agreed, FTC said, not to make any payments for promotion purposes unless it makes the deals available on proportionally equal terms to all competing customers.

Cold-Wave Appeal: Claiming it was denied due process of law by being deprived of oral summation in lower court proceedings, Sales Affiliates (New York) has petitioned the U.S. Supreme Court for a review of the U.S. Court of Appeals decision invalidating its cold-wave patent.

The appeals court had affirmed an earlier U.S. District Court decision confirming a report of a special master who held that Sales Affiliates' cold-wave patent was invalid because the mercaptan waving agent principle used had been discovered and patented before the later patent was issued.

The case grew out of two actions for infringement of the patent brought by Sales Affiliates against Helene Curtis Industries (Chicago), and others.

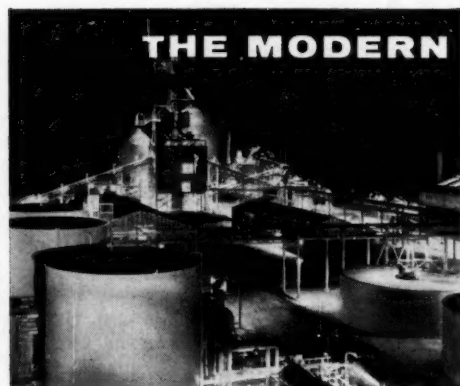
LABOR

Spotlight on NLRB: Among the issues involving the National Labor Relations Board that are being argued this fall in the courts and in national election campaigning is one controversy of particular interest to management of industries that employ large numbers of scientific and technical specialists. It's the lawsuit filed against NLRB by a group of New Jersey engineers, who are up in arms because the board turned down their request for a separate vote on whether they want to continue to be represented in collective bargaining by a trade union. The National Society of Professional Engineers—filing as a "friend of the court"—is asking the U.S. District Court at Washington to rule that the board erred in taking the position that it has the power to deny such a request; NSPE holds that the Taft-Hartley law requires the board to permit professional employees to vote separately for either certification or decertification.

In current electioneering, Democrats charge the Republican-controlled



LITHIUM



THE MODERN

ALCHEMIST *changes things
for the better!*

San Antonio, Texas plant of American Lithium Chemicals, Inc., processing lepidolite ore into lithium hydroxide and other chemicals.

Every day, through modern chemistry, the addition of lithium is changing products for the better. In many areas — notably in glass, ceramics, multi-purpose greases, alkaline storage batteries, air conditioning and heat treating — lithium is reaching out with its magic touch to add superiority to the product or improvement to the process. American Potash & Chemical Corporation is a leading producer of lithium in many forms. Its Trona and Los Angeles, California plants produce lithium carbonate, lithium chloride and lithium bromide. AP&CC's subsidiary, American Lithium Chemicals, Inc., at San Antonio, Texas, makes lithium hydroxide from high-grade lepidolite ore. We suggest you take a good look at the versatile properties of lithium...and in so doing, remember Trona® lithium products are backed by years of pioneering experience and extensive production facilities.

American Potash & Chemical Corporation

LOS ANGELES • NEW YORK • ATLANTA • SAN FRANCISCO • PORTLAND (ORE.)



Producers of: Lithium Carbonate • Lithium Hydroxide
• Lithium Chloride • Lithium Bromide • Borax • Potash
• Soda Ash • Salt Cake • Bromine • Chlorates • Perchlorates
• Manganese Dioxide • Agricultural and Refrigerant Chemicals

Plants: TRONA and LOS ANGELES, CALIFORNIA
SAN ANTONIO, TEXAS (American Lithium Chemicals, Inc.)
HENDERSON, NEVADA

Export Division: 99 Park Avenue, New York 16, New York

IN WOOD FLOUR SOMEONE ELSE'S FORMULA MAY NOT DO

Production conditions and requirements vary widely among plants using wood flour — even among plants in the same industry. A mesh analysis that is perfect for one plant may be too coarse, or too fine for another. One plant may be able to use a single grade of raw material while another requires a blend of two or more grades for best results.

To help with these, and similar problems, the Wilner Company maintains a continuing program of research and technical assistance, supplemented by the services of a leading firm of industrial research consultants.

These services are available at no cost, to help any interested concern in solving development or processing problems involving use of wood flour.

Typical Analysis 80 Mesh Wood Flour

Screen	On	Thru
70	Trace	
80		96.8%
100		79.2
140		57.6
170		45.6
200		32.8

Uses of Wood Flour

Wood flour is a filler and extender, adding strength, bulk, lightness and impact resistance to other more costly materials, such as plastics, linoleum, roofing felt, molded rubber products, wall board and vinyl floor coverings. It is an ideal absorbent for explosives, adhesives, rug and fur cleaners, stock feeds, and fertilizers (with built in insecticides?), and an effective mild abrasive, for cleaning metal surfaces, such as molds.

Other prospective uses include very fine filtration work; as a binding agent and moisture absorbent in ore processing; as an anti-binding agent to give desired porosity after burn-out in products like firebrick.

For samples,
further
information
and
specifications,
please write:



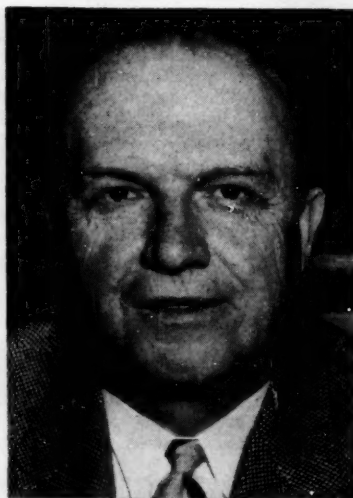
N-4C

Wilner Wood Products Co., Norway, Me.

ADMINISTRATION

NLRB—chairmanned since last year by South Dakota jurist Boyd Leedom — with pro-management, anti-union bias. Such an allegation is not supported by the engineers' case just cited; in this instance, the board—under Leedom—reversed its earlier policy and decided in favor of the labor union concerned. NLRB now holds that a group of engineers is generally not a part of management.

Great Oaks from Little Acorns: While Oil, Chemical & Atomic Workers Union (AFL-CIO) hasn't won any large bargaining units in recent elections at chemical plants, it has picked up three new units that are likely to grow substantially over the next few years. OCAW edged out a group of AFL-CIO craft unions in an 80-to-65 vote at the U.S. Industrial Chemicals Co. plant in Tuscola, Ill., where employment is expected to rise to 400 or more under USI's expansion program. A 16-to-1 victory for OCAW among reactor and pile control operators at Brookhaven National Laboratory (Upton, L.I., N.Y.) is counted on as a step toward organization of the 540 maintenance and janitorial employees there. And at Calvert City, Ky., OCAW came out on top in the first election at General Aniline & Film Corp.'s new acetylene derivatives plant. Balloting: OCAW, 42; Distillery, Rectifying & Wine Workers (AFL-CIO), 2; no union, 27.



WIDE WORLD
NLRB'S LEEDOM: On the spot in court and election controversies.

KEY CHANGES

Harry L. Wuebbold, to director, Globe Chemical Co. (Cincinnati).

John J. Healy, Jr., to director, General Development Dept., Research and Engineering Division, Monsanto Chemical (St. Louis).

C. T. Gilliam, to vice-president and general manager, Texas Foamed Plastics Corp. (Dallas).

LeRoy D. Smithers, to president and chief executive officer, Dow Chemical of Canada, Ltd. (Toronto).

William L. Ward, to vice-president, central sales, Piatt & Smillie Chemicals, Inc. (St. Louis).

Leo J. Novak, to vice-president and chemical director, Commonwealth Engineering Co. of Ohio (Dayton).

G. C. Monture, to vice-president, Strategic Materials Corp. (Buffalo).

Ralph Bruce, to manager, Linseed Division, Archer - Daniels - Midland (Minneapolis).

Edward W. Wilson, to executive vice-president, Armour Co. (Chicago).

Arthur Hanson, to secretary, executive committee, United Carbon Co. (Charleston, W. Va.).

Ivey Allen, Jr., to research coordinator, Bakelite Co., division of Union Carbide and Carbon (New York).

Thomas P. Turchan, to assistant general manager, Industrial Chemicals Division, American Cyanamid (New York).

KUDOS

To **Robert B. Woodward**, Harvard University, the American Chemical Society Award for Creative Work in Synthetic Organic Chemistry (sponsor: Synthetic Organic Chemical Manufacturers Assn.).

To **Warren K. Lewis**, Massachusetts Institute of Technology, the American Chemical Society Award in Industrial and Engineering Chemistry (sponsor: Esso Research and Engineering Co.).

DIED

Max Asch, 53, founder and president, Zenith Drugs, Inc. (Newark, N.J.), at Newark.

NOW THERE ARE 10 CARBOWAX Polyethylene Glycols

Trade-Mark



The widest available range of these versatile compounds

CARBOWAX polyethylene glycol 20-M gives you new opportunities to use this versatile series. Because of its higher molecular weight, its melt and solution viscosities are higher, films formed from it are harder and stronger, and its lubricating action is greater.

Like all members of the series of CARBOWAX polyethylene glycols, 20-M is water-soluble, heat stable, and inert to many chemicals. And it has the binding and suspending properties characteristic of the series. Try 20-M in applications where mild thickening action and suspending power are desired, and as a rubber release agent where intricate molds require a more viscous lubricant.

CARBOWAX polyethylene glycols are widely used as solvents, humectants, lubricants, and intermediates. They have become increasingly important as vehicles for medicaments and cosmetics, as mold-release agents, textile lubricants, softeners, antistatic and conditioning agents, and as intermediates for surfactants and synthetic resins.


With the addition of CARBOWAX polyethylene glycol 20-M, the series has a molecular weight range of 200 to 20,000. The individual products vary in physical form from liquids through soft semi-solids to hard waxes.

The term "Carbowax" is a registered trade-mark of Union Carbide and Carbon Corporation.


For more information on these water-soluble polyols, just call or write the District Office nearest you.

In Canada:

Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal and Toronto.



**CARBIDE
AND CARBON
CHEMICALS**

Carbide and Carbon Chemicals Company
A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street  New York 17, N. Y.

SALES AND DISTRIBUTION

CONSUMER ADVERTISING:

What Top Companies Are Spending

(million dollars)

Rank 1956 Jan.-June	Rank 1955 Jan.-June	Company	1956 Jan.-June	1955 Jan.-June	1955 Total	Rank 1955 Year	1954 Total	Rank 1954 Year
2	2	Procter & Gamble	\$27.3	\$25.0	\$42.2	2	\$44.2	1
4	4	Colgate-Palmolive	14.6	14.9	25.5	5	26.7	3
8	14	American Home Products	9.4	6.8	11.9	13	11.3	15
12	9	Lever Brothers	7.9	9.4	14.5	11	17.8	8
14	18	Bristol-Myers	7.0	5.6	9.9	16	7.6	23
20	22	Goodyear Tire & Rubber	4.2	3.8	7.3	21	6.8	25
25	39	E. I. duPont de Nemours	3.3	2.7	6.3	28	4.9	35
31	32	Borden	3.2	3.1	6.4	24	4.1	43
32	..	Pharmaceuticals, Inc.	3.1	..	..	..	..	..
34	23	Sterling Drug	3.0	3.8	4.9	38	7.6	24
37	59	Revlon	2.9	1.7	3.9	51	1.3	..
38	47	Eastman Kodak	2.9	2.2	4.7	40	3.6	48
39	70	Warner-Lambert Pharmaceutical	2.8	1.6	4.1	49	3.5*	..
44	31	S. C. Johnson & Son	2.6	3.2	5.7	29	6.3	29
45	24	Miles Laboratories	2.5	3.7	3.9	52	7.9	20
46	36	Helene Curtis Industries	2.4	2.8	4.4	43	3.5	51
49	44	National Distillers	2.2	2.4	5.2	34	4.8	37
51	46	Firestone Tire & Rubber	2.2	2.2	3.9	53	4.2	41
57	73	Aluminum Co. of America	2.0	1.5	2.8	67	3.1	58
59	63	B. F. Goodrich	1.9	1.6	2.7	71	3.0	59
62	..	Monsanto Chemical	1.8	1.0	2.0	94	1.2	..
65	95	U. S. Rubber	1.6	1.1	1.6	..	1.8	..
72	75	Reynolds Metals	1.6	1.5	2.8	70	2.5	77
82	..	Chesebrough-Pond's	1.3	..	2.7	74	..	..
83	87	Hazel Bishop	1.3	1.2	2.7	72	2.9	65
89	..	American Cyanamid	1.2	0.7	1.3	..	1.3	..
96	..	Norwich Pharmacal	1.1	..	1.8	..	..	..
Not in top 100	56	Dow Chemical	..	1.8	3.4	57	3.1	57
Jan.-June 1956	98	Pittsburgh Plate Glass	..	1.1	1.5	..	1.3	..
..	100	Olin Mathieson Chemical	..	1.0	2.3	87	2.0	92
..	..	Minnesota Mining & Mfg.	..	1.0	1.4	..	2.0	93
..	..	Union Carbide and Carbon	..	0.6	1.8	..	2.0	98

* Tot-1 for Lambert Co. and Warner-Hudnut.

Source: National Advertising Investments, Publishers Information Bureau.

Chemical Advertisers Dig Deeper

The chemical processing industry is a major contributor to the ranks of the 100 leading national advertisers. Figures for the first half of 1956, just released by the Publishers Information Bureau, show some 27 chemical industry firms in the top strata.

PIB's figures tote up expenditures

in leading media (79 national consumer magazines, 5 national business magazines, 6 national farm media, 7 Sunday newspaper sections and 4 television networks). As such, the data does not show complete advertising investment but does point up the trends.

Most obvious: the upward swing of consumer advertising in the selected media. It hit a high of \$653 million for the first six months of '56 as against \$566 million for the comparable '55 period.

Chemical specialties manufacturers show a definite upward trend relative

to all-industry expenditures. Curiously, however, large chemical companies—despite rising interest in consumer products—follow an anomalous pattern.

Dow, Pittsburgh Plate Glass, Olin Mathieson, Minnesota Mining & Manufacturing and Union Carbide, all previously in the top 100, have slipped out; but Du Pont, Monsanto and Cyanamid are spending more.

Du Pont upped its promotion in general magazines, doubled spending in farm magazines and TV. Cyanamid more than doubled general magazine advertising. Monsanto boosted expenditures in farm magazines, Sunday newspaper sections and TV.

Not surprisingly, specialties manufacturers stack up well among the top spenders in consumer advertising: Procter & Gamble (\$20.9 million), Colgate-Palmolive (\$10.2 million) and Lever Brothers (\$5.7 million) were in the top 10 TV advertisers during the first six months of '56.

Procter & Gamble (\$5.5 million) and Du Pont (\$2.5 million) were among the leading magazine advertisers. Top 5 spenders in the selected media for the first half of '56: General Motors (\$31.2 million), Procter & Gamble, Chrysler, Colgate-Palmolive, General Foods Corp.

Heavier budgeting for consumer promotion by specialty makers is also revealed by industry totals:

Industry Class	Jan.-June	
	'56	'55
	(million dollars)	
Food, Food Products	95.8	87.5
Toiletries	67.3	61.2
Cleansers, polishes	39.7	29.3
Industrial materials	35.1	27.3
Drugs, remedies	33.7	23.6

The industrial materials class includes chemicals, plastics, fibers, rubber, paper products, metals and fabricated metal parts.

The trend in general promotion advertising for large industrial chemical companies seems definitely to be toward higher investments. In '55, Union Carbide allocated \$120,000 more to general promotion, Du Pont \$203,000, and Olin Mathieson increased general promotion expenditure almost nine-fold—to \$54,000. Esso, during the second half of '55, upped its general promotion spending nearly 40-fold, from \$4,000 during the first half to \$152,000. General promotion, ex-

cept in the case of Du Pont, has been concentrated in consumer magazines.

Although many "semichemical" companies are heavy buyers of consumer advertising, relatively little goes for chemical products. Borden ballyhooed instant coffee with \$2 million worth of TV advertising in '55, put only \$26,000 into general magazine promotion of chemicals. Alcoa spent \$1.9 million on aluminum products, \$47,000 on chemicals in the same period. Dow cut chemical and plastics advertising \$217,000 from '54 to '55. Olin Mathieson reallocated about \$55,000 from chemical advertising to general promotion in the same period.

The long-range trend indicates that chemical specialties companies are pushing harder than ever, especially in the booming TV medium and large chemical manufacturers are socking dollars into eye-catching magazine and TV general promotion.

COMPETITION

- Commercial Solvents Corp. will expand its agricultural chemical sales and service activities in the Midwest for the 1956-57 fertilizer season, has placed R. W. Breidenbach, Midwest sales manager, in charge of the effort.

- Buckeye Cellulose Corp., a Procter & Gamble subsidiary, has formed a European division to distribute wood and cotton linter pulp.

- Enthone, Inc. (New Haven, Conn.), will expand its marketing efforts in New England and the Middle Atlantic states, has already increased its staff.

- McKesson & Robbins has added storage and distribution facilities for feed chemicals at Toledo, O., and Charlotte, N.C.

- Carbide and Carbon Chemicals Co. has added 14 new salesmen to its staff.

- Wilson & Geo. Meyer Co. Inter-



Milestone for Fluorine Transit

TONNAGE FLUORINE can now be transported in bulk containers. Previously, the gas had to be shipped in 6-lb.-capacity cylinders weighing 200 lbs. The new containers (above) of Allied Chemical's General Chemical Division consist of three concentric horizontal tanks.

Fluorine is maintained in cold, liquid state in the inner tank by

liquid nitrogen contained in the second tank. Space between the nitrogen tank and the outer shell serves as an insulation shield. Built for Allied by Air Products, Inc., the tank system can be mounted on a truck chassis or used separately as a stationary storage unit. Thus, the new bulk-handling system eliminates a big problem in industrial fluorine sales.

memo to: western industry



Maas leads the way again with first western production
of TETRAPOTASSIUM PYROPHOSPHATE.

In the West, only *Maas* produces and ships a
full line of SODIUM PHOSPHATES
and POTASSIUM PHOSPHATE in mixed carloads.

P.S. Don't forget our full line of PHOTO-PURE
CHEMICALS and PHOSPHORIC ACIDS.

Maas



A. R. MAAS CHEMICAL CO.
Division of Victor Chemical Works
4570 Ardine Street • South Gate, Calif.



SALES

mountain has opened a new sales office in Omaha, Neb., to service accounts in the Dakotas, Nebraska, Kansas and western Iowa.

- Pennsylvania Salt Mfg. Co. has appointed Control Engineering Co. (Denver) sales agent for its line of corrosion-resistant products. Area served: Arizona, New Mexico, Colorado, Wyoming and west Texas.

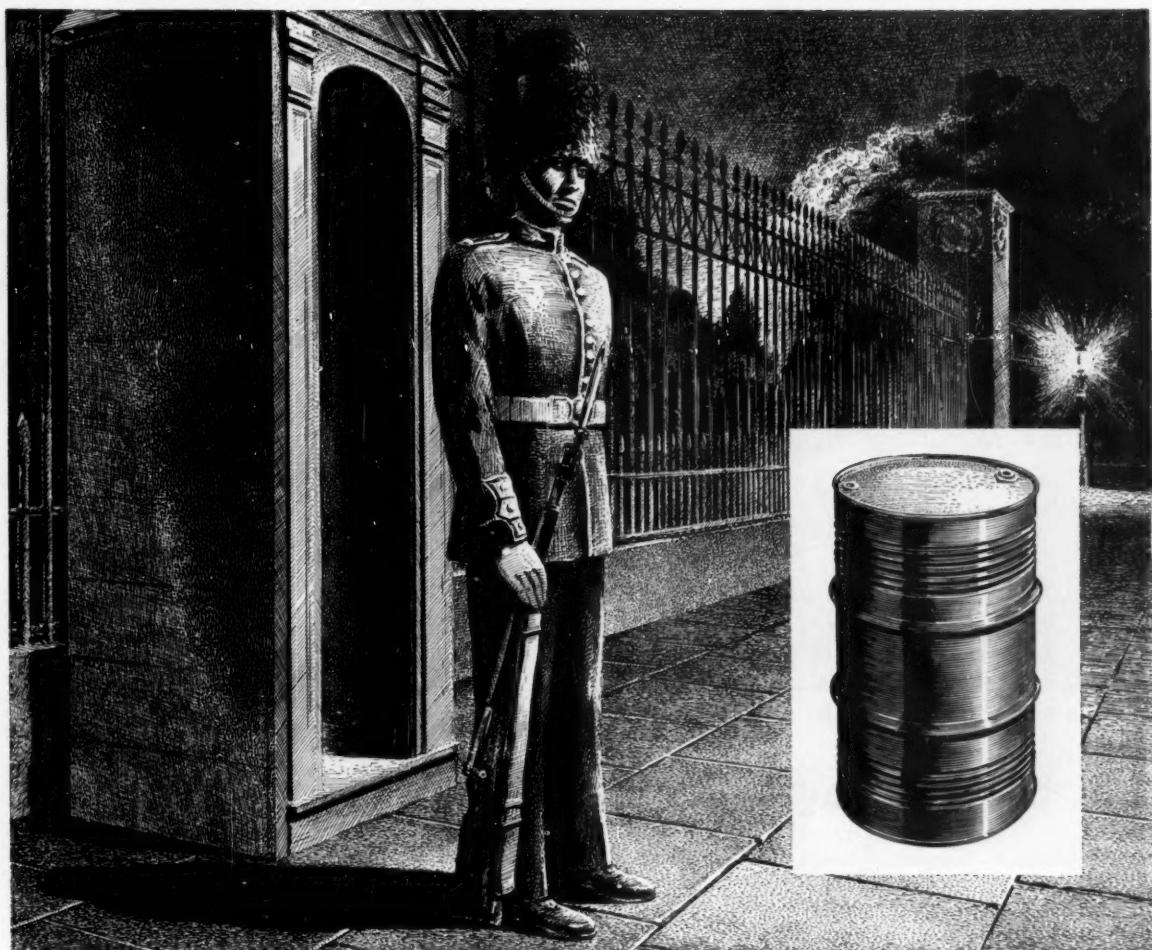
- Sylvania Electric Products, Inc., has moved the New Jersey sales office of its Tungsten and Chemical Division to the company's distribution center at Teterboro, N.J.

- Hercules Powder has opened a new sales office in St. Louis for its Cellulose Products Dept. The office will service southern Illinois, Missouri, Kansas, Oklahoma and Texas.



Roll-Up Storage

WHEN these collapsible rubber tanks are unrolled and filled, they measure 45 ft. long, 11 ft. wide, 6 ft. high. Designed for storing oil, water and other fluids, the tanks have a capacity of 15,000 gal., can be rolled up to a package 8 ft. long, 2.5 ft. in diameter. A pressure-release system eliminates danger from overfilling and rupturing. Manufacturer: Firestone Tire & Rubber Co.



USS Steel Drums **guard** product purity

Care—a special kind of care—goes into the fabrication and finishing of every single USS Steel Drum. From selecting the right kind of rugged steel from our own mills, through the many processing steps of drum-making, until, finally, the component parts—spotless and gleaming—are ready for assembly . . . *care is the byword!*

A final step to insure product protection is the application of a special phosphate solution to the spotlessly clean and scale-free surfaces. The

phosphate coating not only guards against contamination and rust, but provides ideal bond for external paint surfaces. This combination of careful workmanship plus quality materials means that your product's purity is completely protected—from the moment it enters a USS Steel

Drum—until the drum is tapped in your customer's plant.

Make sure your products have the protection they need—always ship in USS Steel Drums. They are available in capacities from 2½ to 110 gallons. There are special fittings and openings for unusual needs.

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USS STEEL DRUMS

"It's Better to Ship in Steel"



UNITED STATES STEEL



NCCA'S WILLIAM AND ROBERT OTTE: Keeping bad debts at bay, as . . .

Credit Managers Swap Data

Are chemical companies having trouble collecting their bills? Apparently not. Currently, the average chemical company write-off as bad debts is less than 1/20th of 1% of annual sales. So says Robert Otte, one of the two cosecretaries of the National Chemical Credit Assn.

NCCA is one of the reasons why chemical companies don't have much trouble with bad debts. Its function—worked out through the intermediacy of its members, credit managers of chemical firms—is to insure the proper granting of credit.

The organization, which is headquartered in New York, is the largest independent credit group servicing the chemical industry. It resulted from a merger this year of two credit groups, the Drug, Cosmetic & Chemical Credit Men's Assn. and the National Chemical Credit Group. The former was organized in 1938 by L. Sonneborn & Sons, Heyden Chemical, Armstrong Cork and others; the latter was set up in 1952 by Goodrich Chemical, Diamond Alkali and Harshaw. The merger was a natural, since both associations were serviced by the same "secretary"—the Fifth Avenue Protective Association.

FAPA, in business for 52 years, primarily as a collection agency, formerly dealt with retail stores only. It now has no retail affiliations, devotes all its time to raw material manufacturers. The merger eliminated duplication in clearances and enabled the two groups to combine their respective files.

Is NCCA just a small edition of Dun & Bradstreet? No, says William Otte, the other half of the brother team serving as cosecretaries. "D&B is the basic credit tool, and is used by all our members, NCCA seeks to supplement D&B with current information, and does not in any way intend to compete with it." One big difference between D&B and NCCA: D&B is a reporting agency and rates firms, while NCCA is an interchange agency, assigns no ratings.

Specifically, NCCA consists of 81 member companies—all manufacturers of raw materials on a nationwide scale. Membership is drawn from both large companies (e.g., Dow, Monsanto, American Cyanamid, Allied and Olin Mathieson) and smaller companies (Atlas Powder, Spencer, Pennsalt and S. B. Penick).

Organization: NCCA is organized in

two groups geographically. Each meets monthly—the Eastern division in New York, the Western division in various cities (Cleveland, Akron, Chicago, Buffalo, etc.). Purpose of these meetings is to review clearances and discuss payment trends. Prior to the meeting, each member may submit the names of three accounts for clearance (some send only one or two). These names are sent to all members of NCCA, and each member indicates its recent experience with that particular account. Nonmembers known to deal with the subject account are also queried. The cumulative record is compiled by the cosecretaries; and at the monthly meetings, each member of NCCA is given a written report on the findings. Members get reports on the accounts submitted by other firms, too.

The reports list such facts as: the members of NCCA that have had dealings with the subject company, the last sale date, the most credit extended in the past 6-month period, the total owing, the amount overdue, method of payment, etc.

Each report, though subject to the scrutiny of the assembled members of NACC, is never the basis of group action, says Robert Otte. It's forbidden in the organization's by laws. Each member firm makes its own analysis and evaluation of the collected data, acts independently of the group in extending or not extending additional credit on the basis of the findings.

In securing the information about a particular account, one of the standard procedures is to ask that company for a balance sheet and a profit and loss statement. Percentage of those refusing to provide this information, says Robert Otte, is "surprisingly small." (Most information is obtained through the mail, although personal calls are sometimes made.)

"The purpose of the whole procedure," William Otte emphasizes, "is to increase sales through the proper granting of credit." Many a company, he says, owes its position in the field to the extra business it has acquired because of its alert credit manager. Anyone, he adds, can pass credit on the government-owned and triple A rated firms—it's the so-called 'marginal' accounts that need adept attention, because they provide profit beyond normal expectation.

Could information from the reports



Air Reduction Chemical Company is a leading supplier of vinyl acetate monomer to the PVAc emulsion manufacturing industry.

PVAc emulsions can paint a pretty profit picture—*without a scent!*

Odorless, easy-to-apply, fast-drying PVAc paints are moving up to the top of "best seller" lists in stores across the country. Professionals and do-it-yourselfers have created a tremendous demand which you can easily and profitably satisfy.

Here are some of the sales appeals your PVAc paint can offer an eager market:

- Superior adhesion
- Excellent color retention, non-yellowing
- Early water resistance

- Exceptional leveling
- 20 minute to 2 hour sealing, drying time
- Ease of application (roller, spray, brush)
- Easy clean-up (soap and water cleans equipment)

Those engaged in the manufacture of PVAc emulsions will be interested in the Airco vinyl acetate monomer bulletin, available from our New York offices.

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BRAND B Dissolved, clear—55 seconds	BRAND C Dissolved, turbid—71 seconds	BRAND D Undissolved, turbid—81 seconds



SHEA sodium phosphate granules dissolved completely . . . completely clear . . . in just 38 seconds!

SHEA sodium phosphate granules dissolve faster . . . end lumping problem!

A simple test you can make in a minute proves beyond doubt that Shea's sodium phosphate granules dissolve faster than competitive products.

The reason: the physical form is different.

Shea's granular phosphates are spray-dried. Each granule becomes a tiny air-filled bead. Shea tripoly and tetra granules pour easily, float into solution, dissolve much faster. No lumping problems to cause time delays.

Make your own test. Note the clearer solutions. Observe, too, that Shea granular phosphates are lower in bulk density; higher in sequestering power—and have fewer dusty particles to annoy you and your customers.

Ask for samples today.

Sodium Tripolyphosphate
Tetrasodium Pyrophosphate
Disodium Phosphate
Trisodium Phosphate
Sodium Hexametaphosphate
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SALES

be used to obtain sales? Robert Otte says it could be, but isn't. According to the code of ethics that exists among the credit managers, the information is intended solely for use by credit departments, and should not be passed on to sales. "Credit managers are sales-minded," says Otte "and when they find that sales volume of a particular account is dropping off rapidly, their natural tendency is to wonder where all the business went. By clearing the account for investigation at the next monthly meeting, they can find out. A sudden surge in sales by another supplier to that account is usually the tip-off. If there's good reason to believe that information has been unethically passed onto the sales department, members can be expelled from NCAA."

Optimistic about the long-range picture, and predicting another round of expansion for the chemical industry, Robert Otte feels that this expansion of productive capacity must be matched by a liberal credit policy.

He sees the current tight money situation as a dark spot that will have an adverse effect on many small companies. When these firms can't borrow, explains Otte, they often use their creditors' indulgence as working capital, and do not meet terms. Credit managers, he believes, will have their work cut out for them in the next year in combating such a trend.

But, he adds, "credit managers are not always given the understanding they deserve. The popular conception of a credit manager is that of a Scrooge sitting behind a roll-top desk with a green eye-shade covering the baleful look in his eyes. But nothing could be further from the truth. Negative or restrictive thinking is as passé as celluloid collars and high-button shoes. Anyone who adopts a negative attitude will be left standing at the post in this highly competitive chemical business."

Especially distressing is the role of the credit manager in many small firms. Comments the cosecretary: "The credit man in a small company is often treated as a bookkeeper rather than as an executive, as he should be. His ability to help or hinder a small company is so great that any management that doesn't recognize this fact and fails to compensate him accordingly can only be considered short-sighted."



Keeping the business end of a hull in business!

Every craft, from a roaring speedboat to the lazy family canoe, is only as seaworthy as the thin "skin" of finish that shields it. And this vital "skin" has to be tough to provide active protection from water, wind, weather!

Superior resins produced through the use of Olefins are greatly responsible for modern rugged finishes. Olefins are members of Atlantic's petrochemical family; that's why you see the oil refinery in the picture.

Olefins are used in production of quality resins for heavy-duty varnishes. They offer faster drying, increased durability against wear and erosion. Typical applications of resins include industrial

flooring, bowling alleys, boats. Olefins are also being used profitably in the manufacture of rubber chemicals, germicides, insecticides, dyes and surface active agents.

Your own business may have use for these or any one of a wide variety of Atlantic petrochemicals. Our sales engineers will gladly work with you in putting any of these chemicals to work in order to improve your present product, develop new products or to speed production—with cost-cutting savings as the result.

For full information, write or wire The Atlantic Refining Company, Dept. H-9, at the nearest office listed.

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Atlantic Refining Company
of Brazil, Rio de Janeiro



SPECIALTIES

Insecticides Smoke Out a Market

Insecticidal smokes—tablets that are burned to release the content of pesticide—have climbed to the \$4-5 million/year sales range in the past three years.

The tablets, featuring low cost, convenience, effectiveness, have been sold chiefly in the Midwest. Now, makers plan a nationwide sales push.

ASK THE average maker of household bug-killer about insecticidal smokes—small cakes of chemicals that are ignited to vaporize and disperse insecticide*—and he's likely to discount their importance to the market. Nevertheless, the smokes, made by a handful of firms in the U.S., have quietly climbed to a retail-sales level of \$4-5 million/year, with distribution still confined pretty much to the Midwest.

Now, encouraged by the growing popularity of its products, the top-volume firm in the business, Continental Chemiste Corp. (Chicago), has its eye on nationwide distribution, is currently putting finishing touches on its program to invade the Eastern market.

Burnt Offering: Lacking the widely publicized novelty of the pressure-packed aerosol insecticides, and without the old stand-by familiarity of the spray-gun products, the smokes have had to fall back on other features. They're cheap to use (some boxes of 20 or more tablets sell for as little as \$1); they're convenient (they're simply lighted in the area to be "de-bugged"); they're effective (made with the proved insecticides also used in other insecticidal forms).

Basically, there are two main types of insecticidal clouds on the market: the slow-burning incense types and the fast-burning "exothermic" types. The incense products, though first to be introduced, seem to have gained little or no volume advantage by their head start.

The slow-burning, insecticidal incenses were put on the market about 1953. Eastern Trading Co. (Chicago), a 30-year-old incense and perfume house, claims to have initiated these

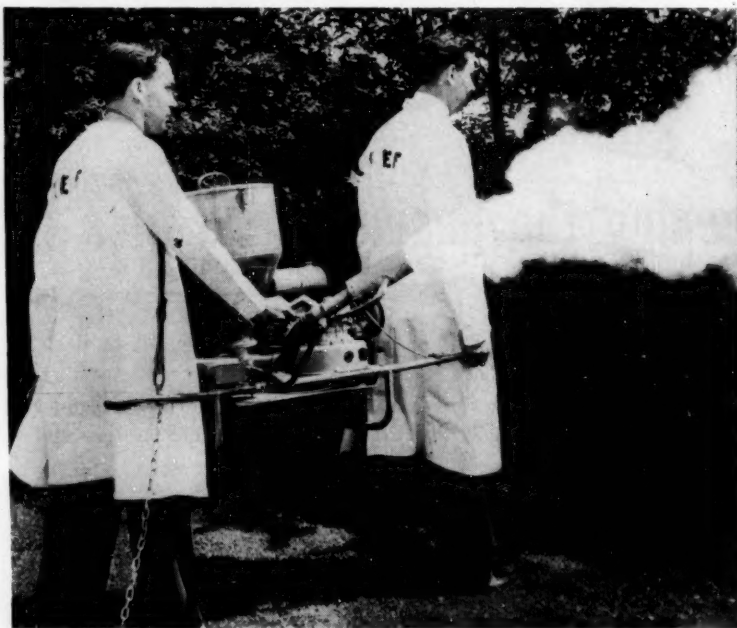
products. They consist of a smoldering base (typically it's made from charcoal, sodium nitrite, binders, gums like benzoin and sandalwood for aroma, and perfume) and the insecticide (lindane's favored, and it makes up about 23-25% of the total formulation).

Formulator's problem is getting a mixture that will vaporize the insecticide; igniting the cones has

been the user's primary problem.

The so-called exothermic products vaporize the insecticide much faster. Composed of charcoal, potassium nitrate and chlorate, lactose and insecticide, these are sometimes lighted by a fuse, burn in a minute or so to release the pesticide in a heavy cloud. Paradichlorobenzene and lindane are favored insecticides here, too. Continental Chemiste is deemed the largest maker of these products, offers three brands: Bug-Tab, its newest; Moth-Cloud; and Smo-Cloud, its first on the market and its largest seller.

Among the other manufacturers of the smokes are Avon-Strand, Inc. (Chicago), which turns out Extermo-Cones; Ray H. Tanck, Inc. (Chicago),



INSECTICIDAL FOG, rather than smoke—and a high-voltage fog, at that—is demonstrated by the British firm Agricola, Ltd. Special attachment on the portable unit shown generates a strong electrostatic field; particles of the vaporized insecticide passing through the unit receive a positive charge. The charged particles are said to be attracted to plants, and the charge insures that the insecticidal dust is uniformly distributed—even on leaves' undersides. Charging insecticides has been suggested before (CW, March 8, '52), and its value is still being debated, in the United States as well as abroad.

*Closely related are the wicks and ribbons that are impregnated with insecticide, and which are lighted to release the bug-killing vapor or mist.

producer of Anti-Insect Fumigation Cones; and Marion Products (Chicago), which makes Fumo-Kill. There are several other smokes, usually sold by mail order.

Unlucky 13: These smokes produce a true aerosol—of exceedingly fine particle size. The particles appear to condense on room walls, to give long-lasting residual protection.

By their action, the smokes come into competition with the electrically operated lindane vaporizers — and they'll likely also face the same problems.

Vaporizers had their big moment two or three years ago, when some 140 makers were turning them out. Now, less than a half-dozen firms are in the business, largely because 13 states prohibited lindane's use in vaporizers. Some \$1.5 million worth are now being sold; most popular unit is said to be Aerovap, Inc.'s (New York) \$35 unit, developed by D. H. Christopher.

Unobtrusive Results: The smokes don't have the direct action of a flyswatter, nor the quick knockdown effect of insecticide bombs. But customers do find that the clouds work well as a one-shot way to de-bugging closets or summer cottages. Hotels, boarding houses and the like find them effective (and virtually unnoticed by guests) and easy to use. Hospitals and similar institutions are also important customers, since the smokes can be set off in closed rooms and forgotten until it's time to use the areas again.

The feature of "light it and forget it," however, carries a few disadvantages—not everyone is willing to ignite a chemical mixture in a room or closet. And in the incense-type products, the powerful perfume used to mask the odor of BHC-lindane (a rather strong-smelling product itself) is unappealing to some.

In many cases, these customers have become smoke buyers because manufacturers of other products have overlooked the competition from smokes. But you can be sure that any concerted promotion of these insecticidal tablets will be met by a vigorous campaign for other insecticidal forms. The next year or so should prove whether the smokes are really a product to be reckoned with, or simply a fad.



PO'S KIEB AND GOFF: Did somebody mix politics into the paint?

Stirring Up Paint Contracts

Did the Post Office Dept. get a shellacking when it decided to repaint mail boxes and trucks in shiny new red, white and blue?

Chairman Olin Johnston (D., S. C.), of the Senate Post Office Committee, thinks so, especially since it was called to his attention that specifications for the job called for Sherwin-Williams paint "or equivalent."

He summoned Post Office officials and other interested persons to testify. The buildup was better than the show. Postmaster General Arthur Summerfield, who declined an invitation to testify, accused Johnston of shameful partisan politicking, and thought the explanation for the tempest-in-a-paint bucket lay in the fact that this is an election year.

The hearing lasted one day, and the result was inconclusive. Ormond A. Kiebb, Assistant Postmaster General, and Abe Goff, Post Office Solicitor, provided the defense. Kiebb said there was no intent to favor Sherwin-Williams, and, in fact, that company was not favored.

Moreover, according to Kiebb, the Kiebb, the new paint coats had turned out very happily—not only esthetically, but also from a business point of view. No less than 27 companies have shared in the contract, Kiebb said, but the department does not have figures showing which companies got which

percentage shares. Use of the brand-name in specifications, Kiebb and Goff swore, was strictly for the purpose of identifying the quality needed. They say such use of brandnames—as a sort of "shorthand"—is not uncommon in government specifications.

Over-all the Post Office witnesses figured, the paint-up job so far has cost about \$200,000. But one witness, William P. Stone, of the Andrew Brown Paint Co., estimated the department could have saved \$150,000 by looking beyond Sherwin-Williams, which he described as "the General Motors of the paint industry."

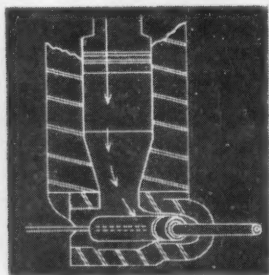
This week, a spokesman for Johnston said there is no incontrovertible evidence on actual costs or on the portion that went to S-W. The committee plans no more hearings, but is keeping the record open for some figures from the agency.

Until these solid figures come in, the spokesman says, there is no attempt to reconcile Brown's estimate with that of the department—"We hope eventually to get some real figures, based on accounting methods, rather than estimates."

The committee has not yet decided whether to pursue the case by issuing a report. If it does, it's a safe bet that it will paint no happy red, white and blue picture of the episode, but rather one with blacker overtones.

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SPECIALTIES

Merged for Looks

While paintmakers are busying themselves with new alkyds and acrylics, U.S. Steel is working on another idea for protective and decorative coatings for steel: it's a bonded vinyl plastic coat.

The latest method of obtaining a long-sought effect (one of the more promising previous efforts was U.S. Rubber's Marvinol-Metal Laminate, *CW*, Sept. 19, '53) USS's new process claims these advantages:

- New variety of colors and textures.
- Good abrasion-resistance.
- Good electrical-resistance properties.
- Resistance to humidity, many chemicals.
- Sound-deadening effect.
- Lower production costs for manufacturing end-products.

Making It Stick: Steel to be coated is first surface-treated to improve its bonding qualities, after which it is spread with heat-cured adhesive. It is then air-cooled, coated with a thermoresponsive vinyl plastic, reheated (to solidify the plastic and soften it for embossing with texture).

At present a semicommercial product being offered for sale on a developmental basis by USS's Irvin Works in Dravosburg, Pa., the coated steel is expected to find uses in refrigerators, radio and TV cabinets, automotive and railroad car bodies, wall panels.

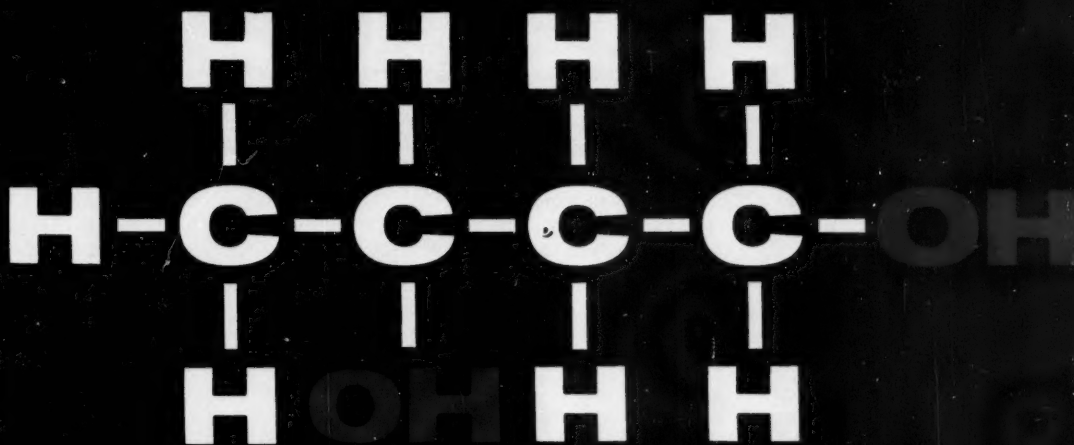
The pilot-line, as now set up, can produce 18- to 28-gauge sheets, 24 to 52 in. wide. So far, no definite annual production goals have been established.

Untiring Tires

Charged with finding ways to maintain stand-by war materials, the Army Chemical Corps has come up with a preservative for stored tires. It's a strippable plastic coating made with aluminum pigment.

The rapid-drying coating is said to protect tires on blocked-up vehicles in outdoor storage against cracking, drying out or becoming scaly for five years.

When used on an assembled tire and rim, the coating also protects the tube, by overlapping the rim and sealing it from air and moisture. And it



Here's a RADICAL-LY different glycol

CELANESE 1, 3 BUTYLENE GLYCOL

1, 3 Butylene Glycol is a low-cost, 4 carbon glycol with unusual stability. Its combination of two non-adjacent hydroxyl groups prevents dehydration or ring closure. It is highly hygroscopic, non-toxic and soluble in water and most organic solvents.

1, 3 Butylene Glycol's longer chain length and steric configuration open new possibilities for producers of textile lubricants; alkyds, polyurethanes, and polyester resins; printing inks; dyes; cosmetics; toilet goods and elastomers.

It is of particular interest in the preparation of phthalic, maleic and fumaric alkyd resins and polyesters for plasticizers, coating materials, laminates, and potting compounds.

1, 3 Butylene Glycol is available from Celanese in tank cars, compartmented cars and drums. Find out how this unusual glycol can improve your product . . . save you money in production costs. Write us for further information. Celanese Corporation of America, Chemical Division, Dept. 652-I, 180 Madison Avenue, New York 16, New York. Export Sales: Amcel Company, Inc. and Pan Amcel Company, Inc., 180 Madison Avenue, New York 16, New York.

SUGGESTED USES

- **POLYESTERS.** Polyesters prepared with 1, 3 Butylene Glycol are non-crystalline in structure due to the glycol's steric configuration.
- **POLYURETHANES.** Saturated polyesters can be prepared from 1, 3 Butylene Glycol with various polyfunctional acids and alcohols.
- **SURFACE ACTIVE AGENTS.** Esterified with fatty acids or etherified with alkylated phenol, 1, 3 Butylene Glycol produces non-ionic detergents with good emulsion breaking properties and improved compatibility with non-polar compounds.
- **POLYMERIC PLASTICIZERS.** Plasticizers with improved oil compatibility and solubility properties are obtained from the longer chain length of 1, 3 Butylene Glycol.
- **HUMECTANTS.** Low volatility, low toxicity and good hygroscopicity properties make this glycol desirable as a humectant for tobacco, cosmetics, and paper.
- **COUPLING AGENTS.** Mutual solubility with water and various organic materials make 1, 3 Butylene Glycol a useful blending and coupling agent for various pastes, dyes, textile lubricants, greases, and toilet goods.

Celanese
CHEMICALS

Celanese®

SPECIALTIES

is possible to use the tire with the coating still on. (It is removed principally for appearance.)

It's all covered in Quartermaster Corps specification QMC 52-C-2250-5. Available on request.

• **Twosome:** Two plastic films give the most strength, says General Tape Corp. (St. Paul, Minn.), introducing its brand-new transparent, pressure-sensitive tape. The new firm, in no

way connected with Minnesota Mining & Mfg. Co., is just beginning to make and market its new product, has combined cellophane with polyethylene, in an attempt to get the best from both.

Still not tradenamed, but called No. 66, the tape is currently offered only in 1/2-in.-wide rolls containing 2,592 in. It is patent-protected, and its advantages are many, the firm says; claims: resistance to many chemicals,

oils, greases; greater dimensional stability than previously offered cellophane tape; and extremely long life; resistance to brittleness, or drying out. Supplies of the new material are now available.

• **On the Surface:** There's another new look for aluminum (*CW*, Sept. 1, p. 46). It is a surface treatment said to give aluminum sheet many miniature reflective facets, which sparkle and



LARVAE eat through a piece of woolen carpeting.

Dinosaurs Star In Mothproofer Promotion Movie

SCENES from prehistoric times, starring ponderous dinosaurs, are designed to help Geigy Dyestuffs, Geigy Chemical Corp., sell its durable mothproofing compound, Mitin. A 26-minute, prize-winning film traces the evolution of wool-eating insects, features pictures of the mammoth animals, and also some fine photomicrography of insects actually chewing away at woolsens.

The film emphasizes that wool-eating insects, originally valuable scavengers, destroying waste matter, have become destructive pests that cause an estimated \$1 billion/year damage in the U.S. alone.

The film was made in Switzerland, and Geigy is releasing it to interested groups and TV stations.

Already, over 200 TV stations have used the movie—Geigy doesn't say whether it has boosted Mitin sales.

from seed sticker to shampoo . . .

DOW



ALL THESE PRODUCTS ARE MADE BETTER WITH METHOCEL

DOW METHYLCELLULOSE
has literally hundreds of uses in a
dozen different industries!

There seems to be no limit to the number of applications for Methocel® (Dow methylcellulose). Its use is ever increasing, and for good reason.

Being a synthetic, the quality of this water-soluble gum never varies. And nine viscosity types and three grades offer a selection greater than any other gum—natural or

synthetic. This broad range simplifies development and control work; has established Methocel as a dependable suspending agent, thickener and film former . . . as well as a dispersing agent, binder and emulsion stabilizer.

The fact that Methocel is an important ingredient in the manufacture of hundreds of products—from seed sticker, paint, paper and pharmaceuticals to shampoo—indicates its versatility and suggests that "Methocel may improve your product and bring economies!"

Today, write for a sample and indicate the proposed area of use so that we may send the ideal viscosity. THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. ME 811A-1.

you can depend on DOW CHEMICALS

DOW

Indoil

Isooctyl Alcohol

INDOIL Isooctyl Alcohol (bp 184-190°C) is a primary alcohol of outstanding esterification quality. Its principal isomeric components are the dimethyl hexanols.

Its esters find application as plasticizers for vinyl and other synthetic resins, as hydraulic oils, synthetic lubricating oils, weed and brush killers, etc. Illustrative properties of typical esters follow:

	Sp. Gr. 20/20°C	Pour Point °C	Viscosity Centistokes 20°C	Temp. (°C) for 1000 Stokes Viscosity
Mono-esters of:				
Octanoic Acid	0.862	-73	5.0	-73
Pelargonic Acid	0.865	-57	5.4	-73
Capric Acid	0.863	-57	6.9	-73
Lauric Acid	0.863	-32	9.5	-73
2, 4-D Acid	1.153	-40	59	-32
Di-esters of:				
Phthalic Anhydride*	0.981	-48	74	-42
Succinic Acid	0.933	-73	16	-64
Maleic Anhydride	0.940	-65	21	-58
Adipic Acid	0.928	-73	18	-70
Azelaic Acid**				
Sebacic Acid**	0.915	-65	27	-68
Diglycollic Acid	0.962	-65	30	-53
Tri-ester:				
Phosphate	0.910	-73	17	-68

* "DIOP" is an outstanding all-purpose vinyl plasticizer, now approved for non-toxic applications as in food wrappings.

** "DIOA" and "DIOS" are applicable in vinyl formulations for low temperature applications.

Contact your supplier for samples of these esters. INDOIL Chemical Company does not manufacture esters, but the outstanding esterification quality of INDOIL Isooctyl Alcohol makes it an unexcelled source for these rapidly growing products.

Send for INDOIL Technical Bulletin No. 22 for further data.

INDOIL

SPECIALTIES

change color as a viewer changes his position.

Aluminum Co. of America achieves the new decorative surface by inducing the formation of abnormally large grains in a special aluminum alloy, then giving it an acid etch, which makes the grains stand out.

Alcoa has tentatively called the finish Spangle-Sheet, can apply it in color or natural finish to plain or patterned rolled sheet and extruded shapes. The product is still in the experimental stage, isn't yet commercially available.

Tinted Cleaners: Liquid Bowlene is a new toilet bowl cleaner made by Climalene Co. (Canton, O.). It's a pink liquid detergent that comes in a blue bottle with blue top. Price: 33¢.

New Bottles for Old: A process for increasing the strength of bottles by giving them a protective coating is now in commercial use at Thatcher Glass Mfg. Co. (Elmira, N. Y.). Called the Thatcher Nu-Glass Process, it involves application of a solution, can be used to treat returnable glass bottles. Dairy and carbonated beverage bottles are getting the treatment.

Low Cost, No Caustic: Nocaust No. 200 is a new cleaning agent manufactured by John B. Moore Corp. (Nutley, N. J.) for use in metal degreasing, paint stripping, and the like. It is an alkaline powder containing no free caustic or inert material, according to the maker. Nocaust comes in 400-lb. lever-lock fiber drums.

PATENTS

Pipe Patcher: Nylon tape, impregnated with an organic peroxide, is suggested by Cromwell & Co. Ltd. (England) for patching pipe leaks. The treated tape (British patent 750,906) is wound about the pipe, then coated with an unsaturated alkyd resin mixture. The alkyd is set by the action of the peroxide.

Stain Preventer: An impregnant for tissues used to "interleave" aluminum sheets has just been patented by Kaiser Aluminum & Chemical Corp. (Oakland, Calif.). The patent (U.S. 2,755,167) suggests use of 0.75-4% (of the paper's weight) soluble chromate (CW, April 19, 1952).

Using Salt Efficiently

by **INTERNATIONAL SALT COMPANY, INC.**—America's largest producer of salt



How to Sample Rock Salt for Screen or Chemical Analysis

Sampling bulk rock salt accurately is often a difficult problem. For when salt is stored in piles, coarser particles collect at the foot of the pile—while finer particles remain inside and at the top. A few handfuls of salt taken at random from the outside and bottom of such a pile almost always mean an inaccurate sample for analysis. Also, during transportation and handling, salt particles of different sizes tend to become segregated.

However, by following a few simple steps, you can easily obtain salt particles of a truly representative size range. This sample will then give accurate results in any type of screen or chemical analysis. Here are the modern sampling techniques approved for most plants where salt is used:

Stockpile sampling of bulk salt. Samples from either indoor or outdoor stockpiles should be taken at three separate points: at the top of the pile, at the base, and at one intermediate point. The sample taken at the intermediate point must come from deep within the pile. To prevent segregation of salt particles during this sampling procedure, a board should be pushed into the salt pile just above the point from which the sample is taken.



in the salt across the width of the car. The

Sampling bulk salt in railroad cars or trucks. In sampling a boxcar load of salt, three trenches should first be made

bottom of each trench should be at least 1 ft. below the surface of the salt, and approximately 1 ft. wide. Equal portions of salt can then be taken from nine equally spaced points along the bottom of each trench. Two of the nine points should be directly against the sides of the boxcar. Sampling in these trenches is best accomplished by pushing a shovel or sampling tube directly into the salt, and not by scraping horizontally.

The same general procedure may be used effectively to sample truckloads of rock salt.



Sampling between transport and storage. Rather than sample bulk salt in cars or in storage,

many companies feel that more accurate samples can be taken during unloading—at some point in the handling process where a flowing stream of salt is accessible on all sides. The points at which salt leaves a head pulley or drops from a chute lip are two of the most desirable places for this type of sampling.

This "running sample" gives consistently excellent results, but it must meet the following conditions as closely as possible:

1. To obtain salt particles of all sizes, the sampling scoop must move at uniform rate across the entire width of the stream. Samples will generally be inaccurate if the scoop moves through the stream from front to rear.
2. The sampling interval should be uniform. And it is better to take small samples frequently than a few large samples.
3. The sampling scoop should have a rela-

tively long rectangular opening, permitting a knife-like cut across the stream. The use of pails or shovels to sample the stream may produce an inaccurate sample.

4. Sampling should take place on a regular stream flow. When taken from an intermittent flow, samples may not be representative. Also, sampling should be carried on throughout the entire unloading period.

Moisture content. Samples should not be taken from bulk rock salt which has recently been exposed to rainfall or excessive humidity. Under these conditions, the proportion of insolubles will increase due to the leaching out of a certain amount of salt. Resulting analysis will then show a higher degree of impurities and a lower sodium chloride content than is normally present.

Finally, it must be remembered that no matter where the salt is sampled—the larger the sample taken, the more representative it will be for final analysis. In fact, many industries require a gross sample of at least 100 lb. from one carload of salt. This sample is then reduced to about 5 lb. for laboratory work.



**TECHNICAL
SERVICE WITH
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Through skilled and experienced "Salt Specialists," International can help you get greater efficiency and economy from the salt you use. International produces both Sterling Evaporated and Sterling Rock Salt in all grades for industry. And we also make automatic dissolvers in metal or plastic for both types of salt. So we have no reason to recommend one type of salt over another; we simply recommend the type and size of salt most perfectly suited to your needs.

If you'd like the assistance of an International "Salt Specialist" on any problem concerning salt or brine—or further information on salt sampling and analysis—just contact your nearest International sales office.

International Salt Co., Scranton, Pa.
Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N.J.; Buffalo, N.Y.; New York, N.Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; and Richmond, Va.

Sampling Tube Is the Simplest Method

Most sizes of rock salt can be sampled from stockpile, bins, trucks, or railroad cars by means of a simple sampling tube approximately 1 1/4" in diameter and about 6 ft. long. Five to eight insertions of this tube into the salt will furnish a sample of about 10 lb. Some of the best tubes for sampling rock salt are those sold for testing grain. They have about 12 openings and a special auger point.



FOR INDUSTRY, FARM, AND THE HOME—

STERLING SALT

PRODUCT OF INTERNATIONAL SALT CO., INC.



GIANT TONGS feed carloads of redwood bark daily to hammer-mill chippers as . . .

Silvichemicals Broaden Their Bite

Total utilization of forest product resources got a big boost recently when two chemicals-from-bark plants came onstream within a month of each other. Pacific Lumber Co.'s (Scotia, Calif.) \$750,000, 10-million-lbs./year redwood-bark extraction plant swung into operation in late July. In mid-August, Rayonier started up a similar plant at Vancouver, B.C., to extract Rayflo (a phenolic compound used in drilling-muds) from the bark of western hemlock.

The first large-scale silvichemical operation to utilize bark as a prime raw material, the Scotia plant is currently turning out two commercial products. One is Palconate, a caustic (pH of 10-11) extract of redwood bark that's soluble only in alkaline media. The other—Palcotan—is a sulfonated extract (pH of 7-8) that's soluble over the entire pH range.

Both materials are mixtures of complex organic acids (chiefly phenolics), have no precise chemical formulas. They're related to purified waste-liquor

lignosulfonates, such as those produced by several pulp and paper companies, but differ from the latter in many respects.

For one thing, the average molecular weight of the new bark extracts is only about 400, compared with waste-liquor products' molecular weight of 12,000 or more. Too, they're more soluble (contain less than 0.02% water insoluble), relatively free of methoxyl groups (less than 0.8%), and contain aliphatic-, carboxylic- and phenolic-ydroxyls in the ratio of 2:3:4.

Roles Reversed: Most of today's commercial silvichemicals* are based on utilization of wastes from pulp and paper production. But Palco's and Rayonier's products have won a place on the chemical market in their own right, are not tied in with waste disposal operations. In fact, both of the new plants completely reverse the usual roles of wood constituents by concentrating primarily on the chemical

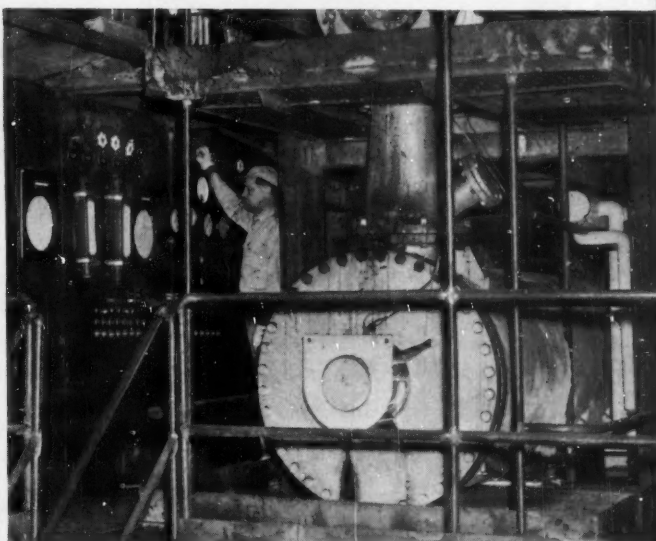
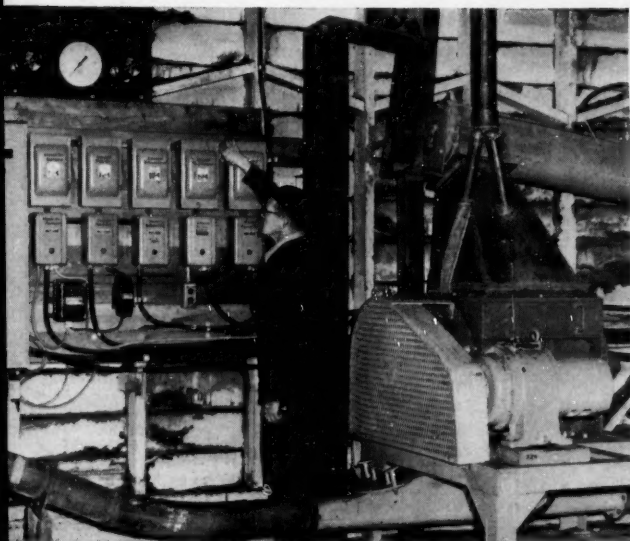
values, returning fibrous by-product residues to board, insulation and other conventional forest products.

It's also significant that Palco's silvichemicals are derived from a part of the tree that's practically worthless, usually disposed of by drying and burning as fuel. The relative abundance of bark (about 15% by volume, 7-8% by weight of dry wood) should insure a plentiful supply of this new chemical raw material to extraction plants.

Bark Digestion: The method employed at Scotia is a continuous process developed in four years of operation in a 2-million-lbs./year pilot plant. It's essentially a digestion of ground redwood bark, followed by recovery and chemical modification of the extracted products.

Processing begins with the chipping of 10-in.-thick slabs of redwood bark in a hammer mill. The resulting chips, shreds and dust are then separated from foreign matter by air flotation, conveyed through a 4-in. line under 10-psi. air pressure to a continuous

*Exceptions are cellulose, naval stores and such tree-derived products as rubber, charcoal.



AIR CONVEYOR (left) carries shredded bark through 4-in. lines to screw digester (right).

digester. Fairly new to the forest products industry, the air conveyor replaces the fans conventionally used to transport small particles. And the comparatively high pressures available in Palco's system permit the use of relatively long lines (to 200 ft.).

In the digester, bark fragments are cooked either with sodium sulfite (for the production of low-alkaline Palcotan) or with caustic soda (to make Palcotate). The cooking cycle lasts about 1 hour at the temperature (about 335-350 F) of steam under 115- to 135-psi., releases about half of the bark's tannin content. Pressure, cooking time and reagents may be adjusted to yield products with varying physical properties.

From the digester, neutral liquor is fed to a screw press, which removes solid residues. After washing and repressing, these solids are sent to a fiber line for processing into insulation board and related products.

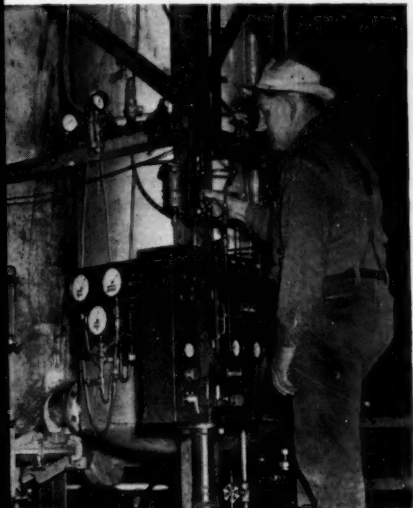
Clear liquor from the press is concentrated to 8-40% solids, drum dried and sent to packaging. When free acid, rather than the sodium salt, is required, the concentrate is acidified to a pH of 2 with sulfuric acid before drying.

Seeking Markets: Sharing the credit for the commercial success of redwood bark silvichemicals is Palco's marketing program, which paralleled the development of the extraction process. Marketed on an end-use basis as well

as on their chemical and physical properties, Palcotan and Palcotate are competing with products derived from waste pulp liquor. Both sell for about 8¢/lb. f.o.b. Scotia, have found promising applications in drilling-muds, water treatment, ore flotation, ceramic binders, leather tanning, dispersing agents, and as a partial phenol replacement in phenolic resins.

To date, the operation has been so successful that Palco, which operates the largest redwood mill in the world, now has to buy bark from other mills to supplement its own supply. If the new silvichemicals live up to expectations, trainloads of bark rolling into chemical plants may become a not uncommon sight.

VACUUM EVAPORATOR concentrates pulp-free liquor (left), readies it for drying and packaging (right).



What it Takes to Make 1 lb. of Titanium

Actual material balances and production costs for commercial production of titanium by the Kroll process are, of course, carefully guarded in company files. But the figures below

provide the best clue as to what they may look like. They're based on the Bureau of Mines' operating experience at its Boulder City, Nev., production facilities.

The plant as operated from June '53 to Aug '54 as a production unit, under contract with the General Services Administration. In that time, it turned out approximately 250 tons of metal. The figures in the table* don't represent that entire production, rather they are what the bureau considers results of a "typical" month.

In arriving at those figures, the bureau distinguished between "property improvements" and "process equipment" for depreciation charges. Because the property improvements (\$265,627) consisted of buildings and other structures that would be expected to have a relatively long life-expectancy, it figured a 20-year depreciation period. For process equipment (\$409,834), it wrote off on a 5-year basis.

Possibly the most important factor to consider, however, in assessing those figures is charges for raw materials, particularly titanium tetrachloride. During the month the figures were compiled, the bureau made 177 production runs, but completed only 162 batches. This means that an abnormal amount of material was being held up in process and the amount of raw materials charged would be correspondingly high. The average consumption over the 15-month period for a pound of titanium was 4.173 lbs. of tetrachloride and 1.337 lbs. of magnesium.

Also, it's important to remember that the bureau had to purchase titanium tetrachloride in small lots. A producer with captive production or with a large-quantity contract would not be similarly restricted. In fact, at the Malone hearings three years ago, the bureau's Rex Lloyd said that he felt tetrachloride production costs of approximately 15¢/lb. could be realized. That would mean a total direct operating cost of approximately \$2/lb. for the Bureau of Mines operation.

And not included in the B-M figures is a process credit for the 3.903 lbs. of magnesium chloride formed along with each pound of titanium.

Such figures help explain how present commercial producers have been able to cut the price of titanium sponge so drastically in so short a time.

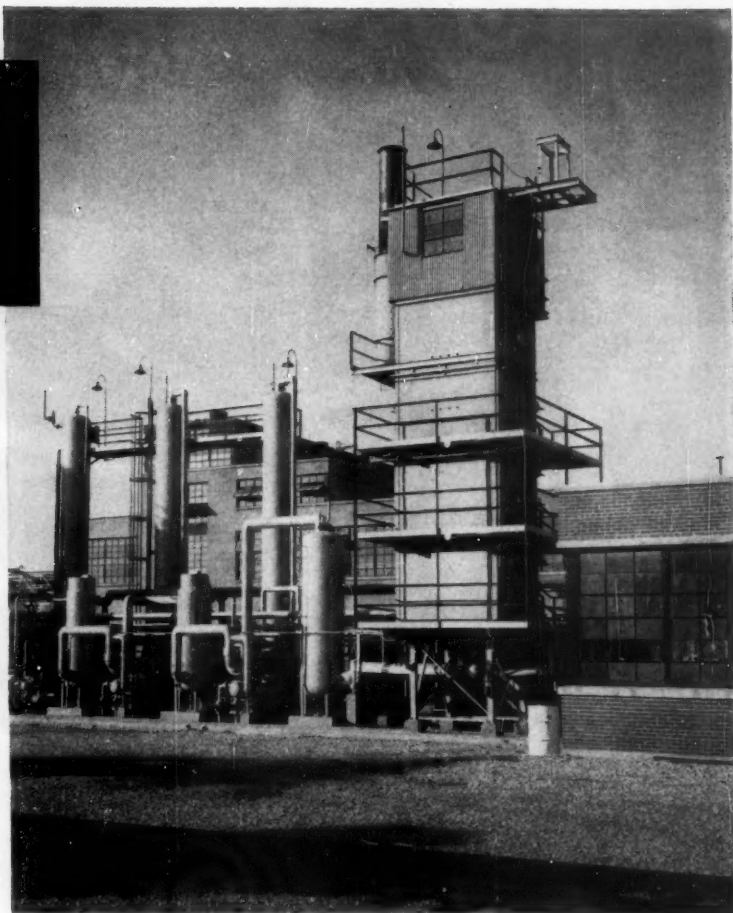
	Quantity	Direct Operating Cost
Raw Materials —		
Titanium tetrachloride	4.371 lbs.	\$1.746
Magnesium	1.412 lbs.	0.428
		<u>\$2.174</u>
Utilities —		
Power:		
Distillation furnaces	3.246 kwhr.	\$0.013
All other	1.468 kwhr.	0.006
Propane:		
Titanium tetrachloride stills	0.435 gal.	0.003
Reactors		0.014
Dry room		0.017
Water:		
Raw	4.824 gal.	0.001
Treated	3.684 gal.	
		<u>\$0.054</u>
Supplies —		
Mechanical	—	\$0.096
Operating	—	0.056
Pot and retort depreciation	—	0.067
Helium	0.874 cu.ft.	0.051
		<u>\$0.270</u>
Labor and Supervision —		
Operating labor	0.198 man-hours	\$0.433
Repair labor	—	0.134
Supervision	—	0.071
		<u>\$0.638</u>
Overhead —		
Office	—	\$0.023
Laboratory labor and supplies	—	0.037
		<u>\$0.060</u>
Total Direct Operating Cost*		<u>\$3.196</u>

*3.903 lbs. of magnesium chloride produced in the process would serve as a credit, not included in these figures.

*Compiled in the recent Bureau of Mines Report of Investigations 5248.

HYGIRTOL PLANT

How it
produces hydrogen
of purity
exceeding 99.7%
at low cost



THE GIRDLER HYGIRTOL PLANT for manufacturing high-purity hydrogen from hydrocarbons and steam combines several well established steps into a unified, continuous process for producing hydrogen of a purity equal to or better than that produced by any other commercial process. For many uses the hydrogen from a HYGIRTOL Plant is preferred even to that produced by electrolysis of water because its oxygen content is so low.

How It Works

With the HYGIRTOL Plant, suitable hydrocarbons such as natural gas, refinery gases, propane and butane, are purified to remove sulphur compounds, and are then reacted with steam at elevated temperatures (about 1500° F.)

over a catalyst to convert the hydrocarbons to hydrogen, carbon monoxide, and carbon dioxide. By employing suitable catalysts in a furnace of special design, the decomposition of the hydrocarbons is substantially complete so that the hydrogen produced will contain less than 0.26% of residual hydrocarbon.

The mixture of hydrogen, carbon monoxide, carbon dioxide and steam from the furnace is cooled by adding more steam and is passed into a converter where the carbon monoxide reacts with the steam over a catalyst to produce carbon dioxide and hydrogen. After cooling, carbon dioxide is removed from the gas mixture by the Girdol process.

In a typical HYGIRTOL high-purity hydrogen manufacturing plant three

stages of purification are utilized and, if desired, the carbon dioxide removed from the gas mixture may be recovered as a by-product.

High Purity at Lowest Cost

Week after week, month after month, Girdler HYGIRTOL Plants maintain a high degree of hydrogen purity. Purity charts show constant high quality in excess of 99.7%.

Users of HYGIRTOL hydrogen plants report operating savings up to 60% over other commercial methods.

Girdler Service is Complete

HYGIRTOL hydrogen plants are designed and built entirely by Girdler. A 32-page Girdler book describes the various processes for producing hydrogen. Write for your copy today.

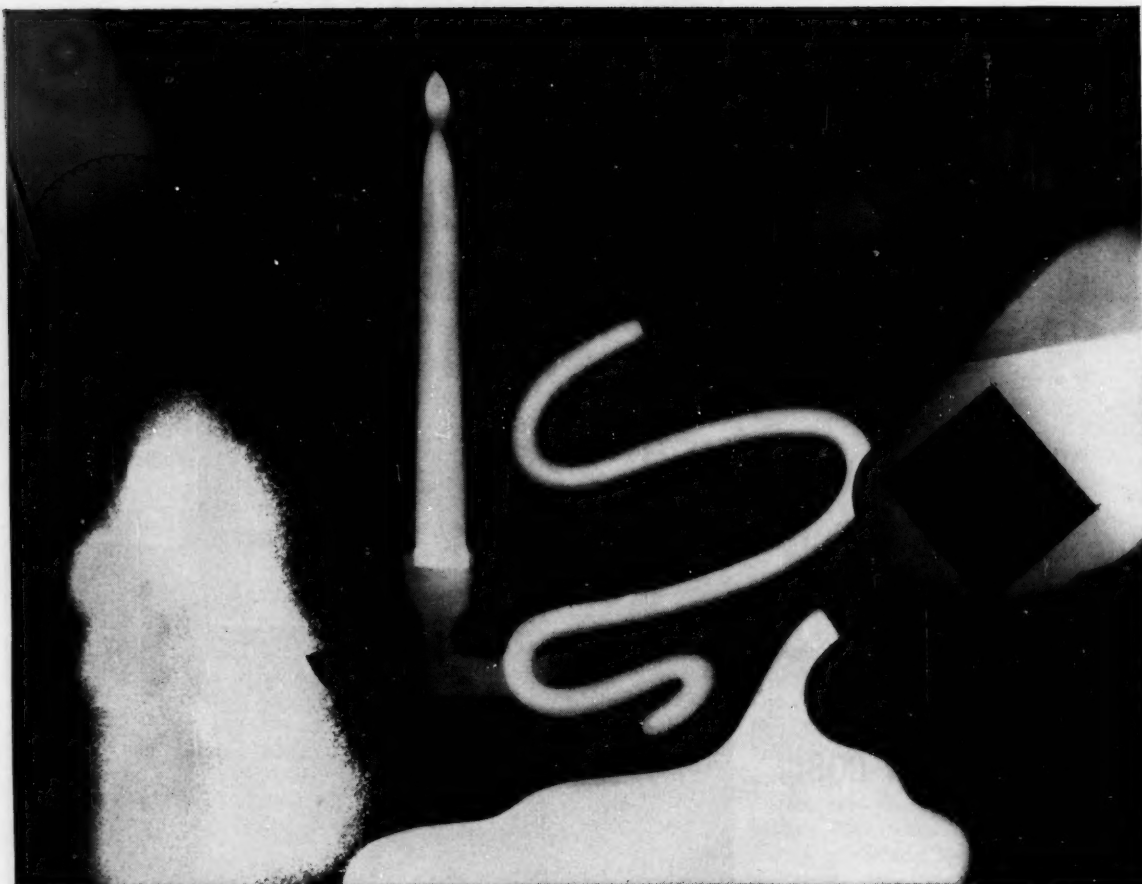
*Hygirtol is a trade mark of the Girdler Company

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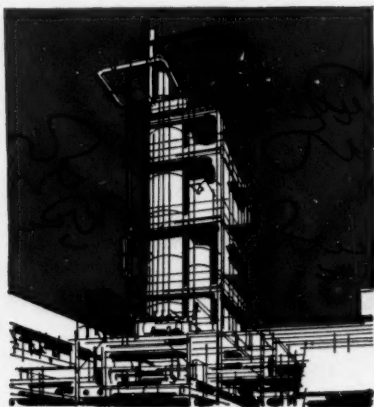
Color stability is what you want! And never before have you been able to purchase in commercial quantities a double pressed stearic equal to Neo-Fat 18-54 for light initial color and retention of color during processing. *Here's proof:*

- Glycerol monostearates made with Neo-Fat 18-54 show maximum color of 1.5R-6Y on a 5¼" Lovibond scale after 5 hours at 200° C.
- In color stability tests, Neo-Fat 18-54 scores 3.7R-16Y on a 5¼" Lovibond scale.
- Sulfuric acid stability test (3 drops of concentrated sulfuric acid in 50 grams of fatty acid) rates Neo-Fat 18-54's initial and final color Gardner at 1.0.

Peroxide Index is nil—even after a year's storage! Odor is bland. Other prime values are low ash content, minimum unsaponifiables, good crystalline structure.

Send for your sample of Armour Neo-Fat 18-54 today!

SPECIFICATIONS	Min.	Max.	AVERAGE COMPOSITION	
Iodine Value.....	5	7	Palmitic Acid.....	51%
Acid Value.....	208	211	Stearic Acid.....	43%
Titer °C.....	53.9	54.4	Oleic Acid.....	6%
Color Lovibond (5¼")..	—0.7R-3Y			
Unsaponifiable %.....	—	0.7		
Moisture %.....	—	0.5		



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tailored for ester manufacturing.

Only Armour uses fractional distillation and solvent crystallization to produce a complete line of uniform Neo-Fat fatty acids offering single components in purities as high as 96%. *Yet you pay no premium in price.* Advantages such as these make Armour your *one best source* for all fatty acids. In the list below, you'll find the specific Armour Neo-Fats that will help you produce the finest esters at the lowest cost. Write us for samples and information.

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14 Commercially Pure Myristic
265 Double Distilled Coco
Plus tailored blends of coco fractions

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Neo-Fat 16 Commercially Pure Palmitic
16-54 70% Palmitic
18 Commercially Pure Stearic
18-57 65% Stearic
18-58 70% Stearic
18-61 80% Stearic

● OLEIC ACIDS

Neo-Fat 92-04 Low Titer White Oleic
94-04 Low Titer Red Oil
94-10 High Titer Red Oil

PRODUCTION

EQUIPMENT

Portable Analyzer: Arnold O. Beckman, Inc.'s (South Pasadena, Calif.) new Model D2 portable oxygen analyzer is suitable for measuring oxygen content of almost any gas mixture, says the company. Completely self-contained, the instrument uses no chemicals, provides instant indication of oxygen concentrations of 0 to 25% at an accuracy of plus-or-minus 0.5%.

Metering Pump: The new Model 1140 Proportioner developed by Proportioners, Inc. (Providence, R. I.), features the company's unique Vane-

Guide check valves, minimum clearance volume cylinders of self-purging design. The unit is adaptable to a wide range of chemical feeding applications at feed rates of 0.8 to 900 gph., at discharge pressures to 1,340 psig.

Colloid Mill: Chemicolloid Laboratories, Inc. (Garden City Park, N.Y.), now offers large-size colloid mills with 20-40% more production capacity than previous mills. Powered by a 125-hp. motor, the large mill handles up to 25,000 lbs./hour of viscous materials, to 50,000 lbs./hour of less viscous products.

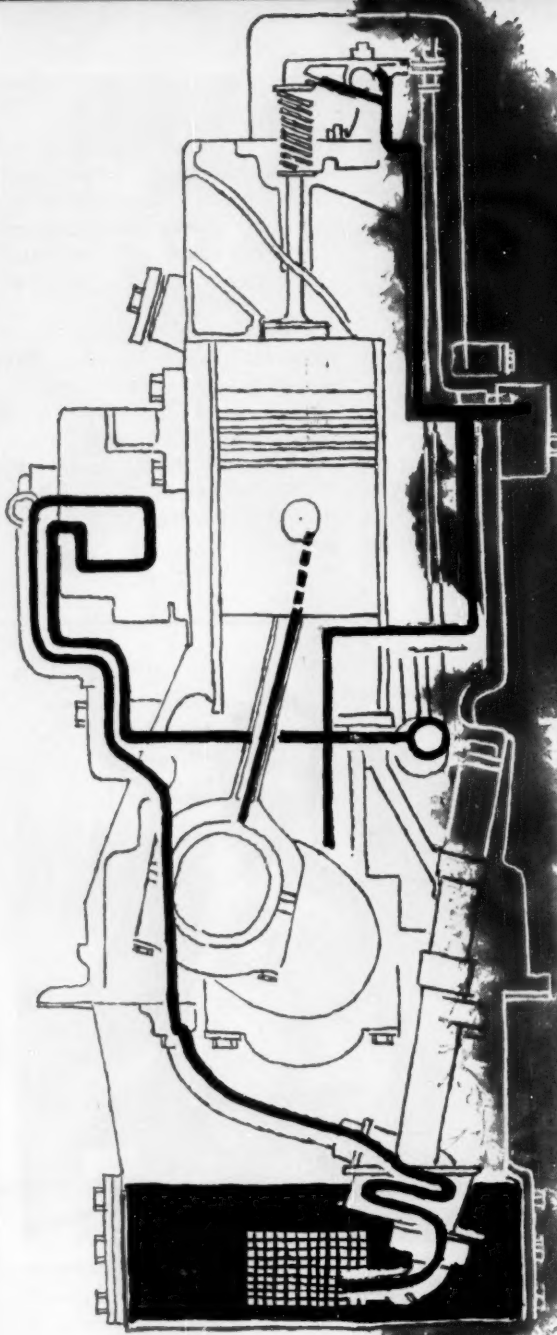


Reverse-Twist Heat Engine

REVERSE a heat engine, and you have a refrigeration machine—say the textbooks. And that's exactly what J. W. L. Köhler, of Holland's Philips Research Laboratories (Eindhoven), is doing with the gas liquefier (above). The unit produces temperatures of -112 to -328 F in a single stage, yields 5 qts./hour of liquid air. It offers a convenient means of liquefying gases for lab use, can be modified to produce liquid nitrogen, to re-

cover escape gases and to dry gases.

Köhler expects the \$7,800 unit to have wide appeal, claims it's smaller, more compact, quieter in operation than similar machines on the market. North American Philips Co., Inc. (Mt. Vernon, N.Y.), is handling U.S. sales of the Philips' unit; Arthur D. Little, Inc. (Cambridge, Mass.), has contracted to sell modified basic units. One modification: dual-purpose heat exchanger-freezing machine.



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Sodium Fluosilicate • Zinc Fluosilicate
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Magnesium Fluoride

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KEYSTONE® Gelatin: Edible, Photographic,
Pharmaceutical, Technical

OTHER PRODUCTS

Animal Bone Charcoal
Bone Black Pigment (COSMIC® Blacks)
Keystone Ammonium Carbonate
Sulphuric Acid • Insecticides-Fungicides

Technology

Newsletter

CHEMICAL WEEK
September 29, 1956

USI's sodium reduction process for titanium is going to find a commercial home. It will be used in the firm's 5,000-tons/year titanium plant at Ashtabula, O. Along with USI's 750-tons/year zirconium plant, it will be housed in the building recently purchased from Lake City Malleable Co. By this tactic, USI hopes to lop six months to a year off its construction schedule (*CW Technology Newsletter*, Aug. 18), and be in titanium production (*CW Business Newsletter*, May 12) by late '57.

Not much is known about the firm's process. But Robert Hulse, National Distiller's vice-president who oversees the operation, says it will "produce a higher-quality sponge than magnesium reduction does, and at a lower cost than that of any other existing commercial technique." Demonstrating the faith it has in the process, the firm is going ahead with the plant without any procurement contract from the government (as have some other recent expansions in titanium). Sodium will come from the firm's own plant.

The new plant means a nice piece of business for Stauffer because . . .

Stauffer is going to build a new, big titanium tetrachloride plant in Ashtabula to supply USI. Stauffer isn't saying much about the plant except that it will be "ample" to satisfy USI's needs. It will undoubtedly be a multimillion-dollar plant, will have to have a capacity of at least 20-21,000 tons/year to provide raw material for a 5,000-tons/year titanium project.

Although Stauffer has adapted its fluid-bed tetrachloride process to Sorel slag (*CW Technology Newsletter*, Aug. 11), the new plant is being designed to handle rutile. That doesn't rule out the possibility that it will turn to other raw material sources, however.

•
If you've been wondering about Sinclair's X-Chemical, it's a phosphine. That, incidentally, would confirm the belief voiced earlier (*CW Technology Newsletter*, Sept. 15) that the compound contains phosphorus.

•
Fansteel will use the Bureau of Mines' liquid-liquid extraction process in its new \$6.5-million plant to be built at Muscogee, Okla. Fansteel has been pilot-planting the process (*CW*, April 28, p. 62).

But even before the older liquid-liquid extraction process gets its large-scale tryout, the Bureau of Mines is well advanced on a newer process, also a liquid-liquid extraction. In the newer version, a concentrate of tantalum and columbium is dissolved in a mixed hydrofluoric-sulfuric solution. The two metals are then extracted with methyl isobutyl ketone. Then columbium is stripped from the mixture by a weaker solution of the

Technology

Newsletter

(Continued)

acid mixture. A second extraction with even weaker acid leaves tantalum in the ketone.

So far, work on the process has not gone any further than bench-scale. But although reagent costs appear high, it turns out high-purity metals, may be able to save time and a few processing steps.

You can expect to hear more about a new pulsed ion-exchange column developed by D. E. Weiss and co-workers at the Commonwealth Scientific and Industrial Research Organization (Melbourne, Australia). By causing the ion-exchange resin to "open up" intermittently, pulsed operation permits slurries of up to 40% solids content to be processed directly without first having to be filtered. Added advantage: the pulsing system can be installed in existing plants with only slight modification of conventional fixed-bed ion-exchange columns.

Electrophoresis may assume commercial stature. Beckman Instruments last week displayed a new apparatus that, it hopes, may be the forerunner of a new unit operation for chemical process companies.

Beckman disclosed that it now has under development—and hopes to perfect in the next 1-1½ years—a pilot electrophoresis unit capable of separating "several liters/hour" (current lab model handles 8 ml./hour) of such materials as proteins, amino acids, other biological and organic products. And within 5 years, predicts Beckman, throughputs of 50-100 gal./hour may be feasible with living-room-size commercial production units.

Here's how electrophoresis works: Complex chemical mixtures are fed to a central point at the top of a wetted sheet of filter paper. As the material is carried down the sheet by a controlled flow of electrolyte, electrodes at either side of the sheet create a uniform potential drop across it. The chemical components migrate horizontally according to the electrical charge characteristic of each, drip off the sheet at different points along the bottom edge.

Large-scale equipment, employing ground glass in place of filter paper, would be particularly useful, says Beckman, for separating dyes, dye intermediates, pharmaceuticals, and for immuno-chemical work.

Tranquillizer drug manufacturers were reassured last week that a new government agency being set up to evaluate the safety and effectiveness of the chemical calmers won't interfere with their commercial development or marketing. Opening a two-day Washington conference on the evaluation of drugs in mental illness, Chairman Ralph Gerard said that such concern stemmed from a "gross misunderstanding of . . ." the \$2-million drug evaluation program soon to be launched by the National Institute of Mental Health.

look...

it's

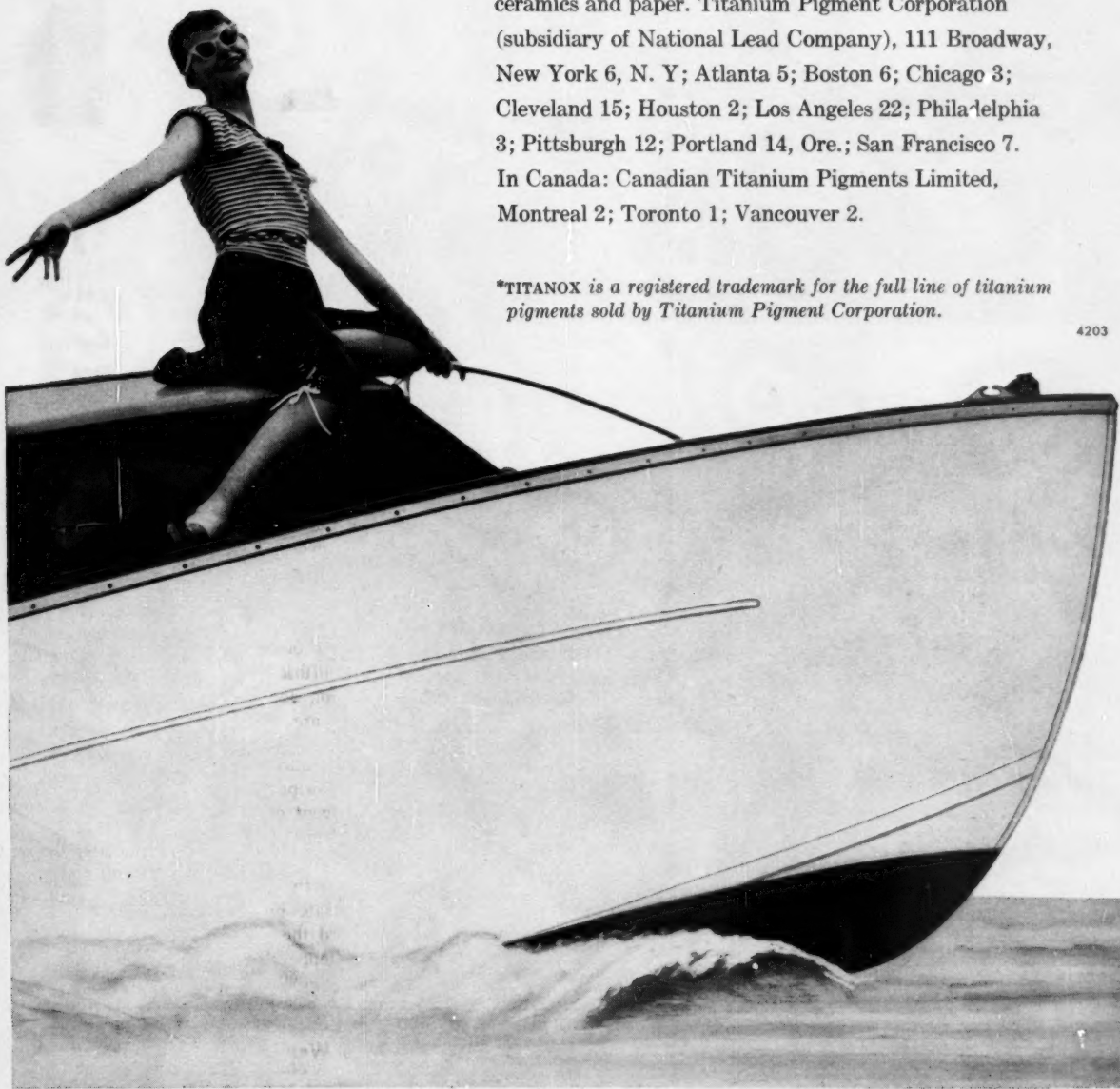
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*TITANOX is a registered trademark for the full line of titanium pigments sold by Titanium Pigment Corporation.

4203





Markets Outlook: A Pattern of Prosperity

The chemical industry as a whole will wind up 1956 at least 10% better than last year. On-the-spot CW reporters, canvassing chemical purchasing agents, sales managers, market and other company executives last week, found a surprisingly general tone of optimism that is expected to prevail well into the new year.

Throughout the country, chemical supplies will be more than adequate to cover any anticipated need, and demand will continue to grow at a satisfying rate. Outlook for the fourth quarter, in contrast with the generally sluggish tempo of sales during the last three months, appears bright.

Another development, noteworthy because of its consistent appearance in most area reports, is the uptrending in price of some chemicals despite a decidedly softer market.

Here, in detail, and moving from East to West, is the present—and near-future—state of the nation's chemical markets:

EAST

Consensus on the East Coast, setting the tenor for all sections of the country, is steeped in optimism. Industry prognosticators are certain that this year will end up as one of the most productive ever—in sales and profits—even though the third quarter was relatively poor. Reason for the happy outlook: indications of a strong comeback in the fourth quarter, carrying over into '57.

Chemical makers' predictions of gains in business volume during '57 range from a modest 5% to a perhaps overly optimistic 25%. There's more concord, however, on the immediate future: most look for a 10% pickup during the next three months.

There's a trend toward increasing prices—soon to go up (next week) are chlorine, caustic soda, soda ash, phthalic anhydride; and slated for a probable 10% hike by the end of the year, dibutyl-*p*-cresol. But this price

trend in the East is not as strong as that reported elsewhere. On the whole, prices here appear comparatively stable with few decreases except in the plastics field. Down significantly are styrene monomer and polyethylene because of oversupply.

The word "glut" is heard, especially in reference to ammonia and ammonium sulfate (this seems to be true everywhere); too, there's oversupply of pyridine, toluol, hydrochloric acid and naphthalene. Less critical, though bothersome, are high stocks of sulfuric acid, ethyl and methyl alcohol, and glycerine. But manufacturers are confident that increased demands during the fourth quarter will easily wipe out the surpluses.

Cogent comments on '57 from the Northeast: "... anticipate no shortages in the important acids"; "... oils and fats may be in tighter supply toward the end of next year because of stepped-up detergent demands"; "... occasional pinch in caustic ex-



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MARKETS

pected"; "prices will move up moderately in '57."

In the more industrial areas (e.g., around Pittsburgh), chemical users and producers are nearly unanimous in reporting that the steel strike wasn't long enough to "hurt"; sulfuric is in "strong supply," though price may drop slightly in '57. Plasticizers are weak, but will pick up with auto industry resurgence; there'll be more carbon tet available, likely before year's end.

SOUTHEAST

News from the Southeastern and Southern sections of the country is buoyant with bustling activity and high hope. Georgia, Alabama, Mississippi and Florida are experiencing the greatest industrial growth in their history. Within the first six months of this year, 77 new plants were built at a cost of more than \$180 million. During this same period, existing industries expanded facilities by more than \$70 million. While these expenditures were not limited to the chemical industry, they do indicate the healthy economy of the area.

One Southern chemical company*, expects a 28% increase in its dollar value for this year, and an additional whopping 30% jump for '57. Other chemical firms report sales gains of as high as 40%. But as expected, fertilizer makers are less gleeful about the future because of the unstable farm situation. The outlook, says one, "depends to a great extent on what happens to our farm program. . . the way things are right now, I wouldn't venture a guess as to how next year will turn out."

Prices and supply demand status of chemicals are similar to that noted in other areas—price increases on alkalis are coming, even though no shortages are apparent. Most items are in balance, except sodium silicofluoride and activated carbon, which are reportedly tight, and the usually more-than-ample commodities such as potash and all forms of nitrogen.

The last quarter of the year, all of '57—and even '58—will sing with the vigorous boom in the South and Southeast; but higher prices (because of rising labor costs, steel prices) will strike a discordant note. Chemical demand will remain strong, but supplies will be adequate.

* Puritan Chemical.

MIDWEST

Moving westward, the promise of prosperity is repeated. The majority of chemical company executives queried report that this year will average out about 8% better than '55 in both production volume and sales, and '57 will likely be better—some 5-10% healthier than '56.

The plastics industry, particularly, is having a remarkable growth here. Sales are running 20-25% above last year, and incoming orders assure that the boom will last well into '57. (Note: one marketer insists that the recent drop in styrene prices will make the plastic more competitive with wood and paper in thin-walled molds, points out that replacing other materials may be a coming styrene role.)

Petrochemical marketers also report better-than-average gains this year (15-18% above '55), with a 12% hike foreseen for next year. Even pesticides in '56 are expected to move at least 10% above last year's business, and next year will probably do equally as well.

On the other hand, in the country's wide bread-basket, the depressed farm situation is reflected in curtailed fertilizer sales. The drop is about 8%. But, says one marketer: "Next year should be better."

The general trend of price-hiking during the final quarter of '56 and in '57 will be evident in the Midwest as in other sections of the country, and with little chance of any significant price cuts. Reason? Again the prevalent plaint of "increased freight rates, labor costs, strikes, etc."

It's apparent that the steel shut-downs of the past summer did not have as serious an effect on chemical markets as had been expected. One noted result, though, was the tightening in supply of pyridine (contrasting with the loose situation in the East), methylene chloride, and methylcellulose. One company purchasing agent complains that he had to pay "\$8/drum for pyridine because of the shortage."

Supply/demand of most chemicals in this largest market area of the country fits snugly into the nationwide picture—good supplies with anticipated continued increase in demand especially for aromatics (except toluene), chlorinated hydrocarbons, heavy chemicals, fats and oils.

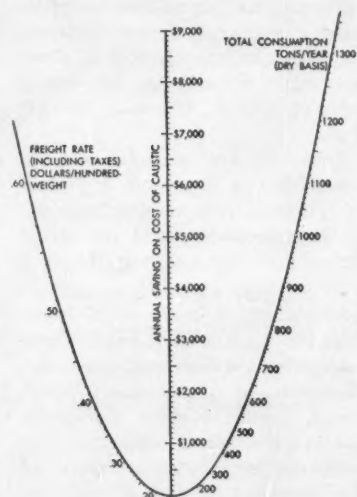
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For help in figuring your muriatic acid needs, send the coupon for our technical data sheet on this product.

It tells at a glance the amount of muriatic acid you need to make up various volumes of different Baumé solutions.

The same data sheet gives advice on the safe handling of muriatic acid, and lists the characteristics of Hooker muriatic.

"Hooker White" is a grade of muriatic acid that's probably one of the purest you can buy in volume anywhere. It's free of arsenic, contains no more than .003% sulfates, .0001% iron. Like Hooker's standard grade, "Hooker White" is shipped in 13-gallon glass carboys and rubber-lined tank cars. 18°, 20°, and 22° Baumé.

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MARKETS

Appraisal of fertilizer chemicals in the Midwest echoes reports from other sections, with ammonia and ammonia products near the market-flooding stage. Even lowered prices, say some, aren't giving any "push" to sales.

Future price hikes also fall into line with other on-the-spot reports: likely to go up next year are benzol, phenol, ethanol.

SOUTHWEST

Turning the survey spotlight on the busy Southwest, business next year is expected to top that of '56 by at least 10%. Sales are now about 5% better than they were last year, and supply/demand for most items is neatly balanced. There are exceptions, of course. Sales of agricultural chemicals and pesticides have suffered because of the severe drought that hit Texas this year. Conversely, Louisiana, Mississippi and Arkansas, which had plenty of rain, have thus far had a fairly good year of fertilizer movement. Insecticides, too, are doing well. Benzene hexachloride (BHC) manufacturers, for example, report their entire production "sold out."

Sulfuric acid, though, pops up on the long side of the ledger. Reasons: falling off of the rayon industry in this area; new productive facilities coming on the scene; "bad agricultural year." It's interesting to note, however, that the Southwest is the only section not classifying ammonia in the glut category. There is plenty of ammonia available, but not enough to constitute a serious surplus.

Formaldehyde sales suffered during the summer months, chiefly because of the plywood industry's vacation shutdowns, but fall sales are showing a hearty pickup.

Roundup comments: acetic acid and anhydride are in for increased sales in '57, due to more synthetic rubber use; more acetone will be hitting the market; soda ash, chlorine, caustic, and carbon tet are steady now, should remain so next year; ditto for sodium sulfate, with a tightening in '58; phenol sales are keeping pace with demand, are expected to double in '57.

The report on strikes affecting the Southwest follows opinion from other areas—no effect whatsoever. Price outlook is also the same: general increase in the fourth quarter, more of the same next year.

WEST

Up and down the West Coast, chemical marketers are in a pretty good frame of mind with the general high level of activity registering in both production and sales. Average dollar volume for the year will be up 10% over '55 (one reports a 20% increase), and the same betterment is anticipated for '57. Heard frequently, though, is a familiar comment: "Business has been great, but profit margins are getting smaller." This explains the rash of price increases that have already been posted (on phthalic, phenol, butyl solvents, chlorine, chlorinated hydrocarbons) and those expected in the near future.

There's been some price-cutting (rubber-grade styrene, polyethylene, ammonia and nitrogen products, methanol), but they've been exceptions rather than the rule. Supply/demand is very much in balance, with ag chemicals again bringing up the rear in terms of activity. The latter are definitely "soft."

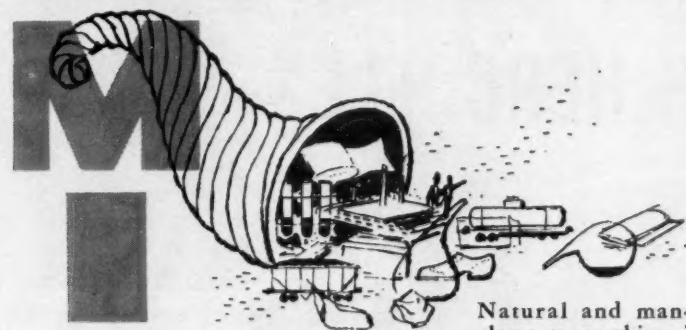
Potentially soft: some fats and oils, especially soya if exports don't hold up. Formaldehyde is also "longish," but producers—new and old—aren't too worried. The long-range future is bright.

Recent strikes in the metal industries have had little effect on chemicals, save perhaps a few coal chemicals. Shutdowns in the industry itself, though, produced some spot shortages in plastics and resins, solvents, chlorinated hydrocarbons, glycols. All these shortages have been made up, but inventories have been depleted, and they won't be rebuilt too quickly.

Chlorine is tight, and the condition is expected to last for some time. One major maker is hurrying expansion plans because of the increased demand. There's a definite tightening in ethyl alcohol supply, and with more ethylene going to polyethylene production, the shortage will be accentuated in '57.

Sum-up for the West Coast—and one that could be appropriately applied to conditions in all sections of the country: business has been just plain good—and it's going to be even better. No serious shortages, no serious oversupply (except for ammonia); prices in general will go up to widen narrowing profit margins. The industry as a whole will follow a pattern of prosperity.

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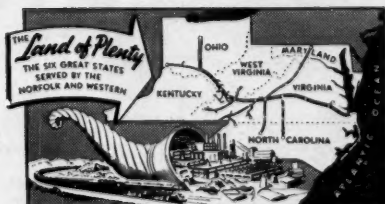
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Major vinyl processors know that the Hercoflex family offers the opportunity to select the one plasticizer designed to do a specific job best. To find out more, write Hercules. Outline your requirements and we'll be glad to send technical data on the Hercoflex that meets your specifications.

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Market Newsletter

CHEMICAL WEEK
September 29, 1956

The list of chemical prices slated to go up next week continues to lengthen. Added are items in just about every category from heavy chemicals to waxes.

Significant, though hardly unexpected, are those sparked by earlier announcement of upcoming increases on some basic commodities. The soda ash hike, for example, is the chief reason behind the higher fourth-quarter schedules on, among others, sodium sulfide and tetrasulfide, sodium sulfhydrate, sodium metasilicate and orthosilicate.

Oct. 1 will be the contract and spot price-changing date for most of these products; on the exceptions, the meta- and orthosilicate, contract buyers won't have to pay the higher price until Nov. 1.

The 10¢/cwt. chlorine climb that goes into effect next Monday will nudge calcium hypochlorite upward 35¢/45-lb. case, but the increase won't influence current chlorinated solvent quotes. Carbon tetrachloride, perchloroethylene, and trichloroethylene were advanced during the second quarter, but there was some speculation earlier this month that the impending chlorine increase might move makers to push the solvents higher.

Consumption, especially of the carbon tet, is fairly good at the moment and is expected to pick up even more. But it appears that as far as price is concerned, users needn't worry about an increase—at least not through the first quarter of '57.

Buyers of microcrystalline wax have been actively picking up material during the last couple of weeks. The reason is obvious: contract users are beating the Oct. 1 deadline when laminating grades of the material will go up ½¢/lb.

The same thing is happening in paraffin wax circles. Producers may be whistling happily at the better business volume now, but some are certain October trading will be off because of the rush before the hike.

Among the coal chemical intermediates, aniline is another pegged for a fourth-quarter increase. Most new lists will show tank-lot quantities at 21¢/lb., c.l. and truckloads at 23¢, and l.c.l. at 24¢/lb. All prices are f.o.b. shipping point with freight allowed. West Coast prices have a 2¢/lb. differential.

Spot buyers of technical-grade 2,6-di-tert-butyl-p-cresol (DBPC) are already paying 9¢/lb. more for their needs, and contract customers will be handed the same across-the-board increase Oct. 1.

CP (food grade) material moved up a like amount a few months ago, and remains unchanged now.

Production cuts and layoffs throughout the Pacific Coast's

Market Newsletter

(Continued)

Douglas fir plywood industry may hold some bad news for resin makers. At least one plywood company has slashed prices to a postwar low of \$67/1,000 sq. ft. (quarter-in., D-grade, sanded on one side), and the action may trigger a price war.

Plywood prices have tumbled this year from a high of \$90, but orders have still failed to keep pace with production.

In Washington, Office of Defense and Business & Defense Services Administration officials are taking their cautious time choosing among the four (Olin Mathieson, Carbide, Shell, Dow) glycerine tax amortization applicants (*CW*, Sept. 15, p. 80). The total tonnage involved in their total applications far exceeds the gap in the government's expansion goal, so okaying all four is out.

To give newcomers Carbide and Olin the tax write-off nod would appear to be the easy way out, but that solution would overlook some important factors, such as plant dispersion.

BDSA is now trying to work up a set of criteria fitting these considerations into a point system to help in the decision-making. The applicants have been reportedly queried for additional information that will influence the final outcome of the defense planners' discussions. Says one ODM official: "We've got a lot of work to do before any certificate is issued."

The ICI-Hercules methyl methacrylate combine (*CW Business Newsletter*, July 21) is provoking continuing speculation about the outlook for methacrylates. Rohm & Haas' Otto Haas calls the ICI-Hercules move a "very major challenge," adds there will certainly be a "fight to secure new markets for new products."

Incidentally, methyl methacrylate consumption reportedly was 70-75 million lbs. in '55—slightly under capacity—and may climb 75% higher by 1960.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending September 24, 1956

	Change	New Price
UP		
Chromic acid, 99¾%, dms., c.l., works, frt. equald.	\$ 0.01	\$ 0.295
Potassium bichromate, gran., bgs., c.l., t.l., works	0.015	0.18
Oleostearine, dms.	0.0075	0.1175
Sodium bichromate, gran., bgs., c.l., t.l., works	0.0075	0.13
DOWN		
Crude coconut oil, tanks, N.Y.	\$ 0.0025	\$ 0.11875
Tin metal (Straits)	0.03	1.05

All prices per pound unless quantity is stated.

NOW you can get V-C Organic Acid Phosphates in tank car quantities

Alkyl and Aryl Acid Phosphates are now in commercial production by Virginia-Carolina Chemical Corporation and are available to you in tank car quantities. Higher purity and lighter color are unique characteristics of these V-C Acid Phosphates. Varying from liquids to waxy solids, they are strong organic acids which form useful salts with alkali and amines. Solubilities change with chain length.

V-C produces the correct Acid Phosphate for any system. These products are useful as: acid catalysts in resin curing; chemical intermediates in the formulation of rust preventatives; metal treating agents; tanning agents; degreasing agents; heavy metal ion extractants; textile lubricants; and oil additives.

Here are the physical and chemical properties of "typical" V-C Acid Phosphates:

ACID PHOSPHATE	ACID NO.	FLASH POINT	SOLUBILITY IN WATER	SOLUBILITY IN BENZENE
Ethyl	567	245°F	Soluble	Insoluble
Butyl	429	265°F	Partially	Soluble
Isooctyl	307	335°F	Insoluble	Soluble
Phenyl	360 Min.	255°F	Partially	Soluble
Octylphenyl	200 Min.	290°F	Insoluble	Soluble
Stearyl	163	440°F	Insoluble	Soluble

The demand for V-C Acid Phosphates is growing. Now is the right time to get more information. Samples and data are yours for the asking. Just write us on your company letterhead. We will reply promptly or send one of our technical men to see you if you so desire.

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Dibutyl hydrogen phosphite
Bis(2-ethylhexyl)
hydrogen phosphite
Trimethyl phosphite†
Triethyl phosphite†
Triisopropyl phosphite†
Tributyl phosphite†
Trihexyl phosphite†
Triisooctyl phosphite††
Tris(2-ethylhexyl) phosphite†
Tris(2-chloroethyl) phosphite
2-Ethylhexyl
octylphenyl phosphite
Tricresyl phosphite
Diethyl ethylphosphonate
Dibutyl butylphosphonate
Bis(2-ethylhexyl)
2-ethylhexylphosphonate
0,0,0-Triethyl
phosphorothioate
0,0,0-Tributyl
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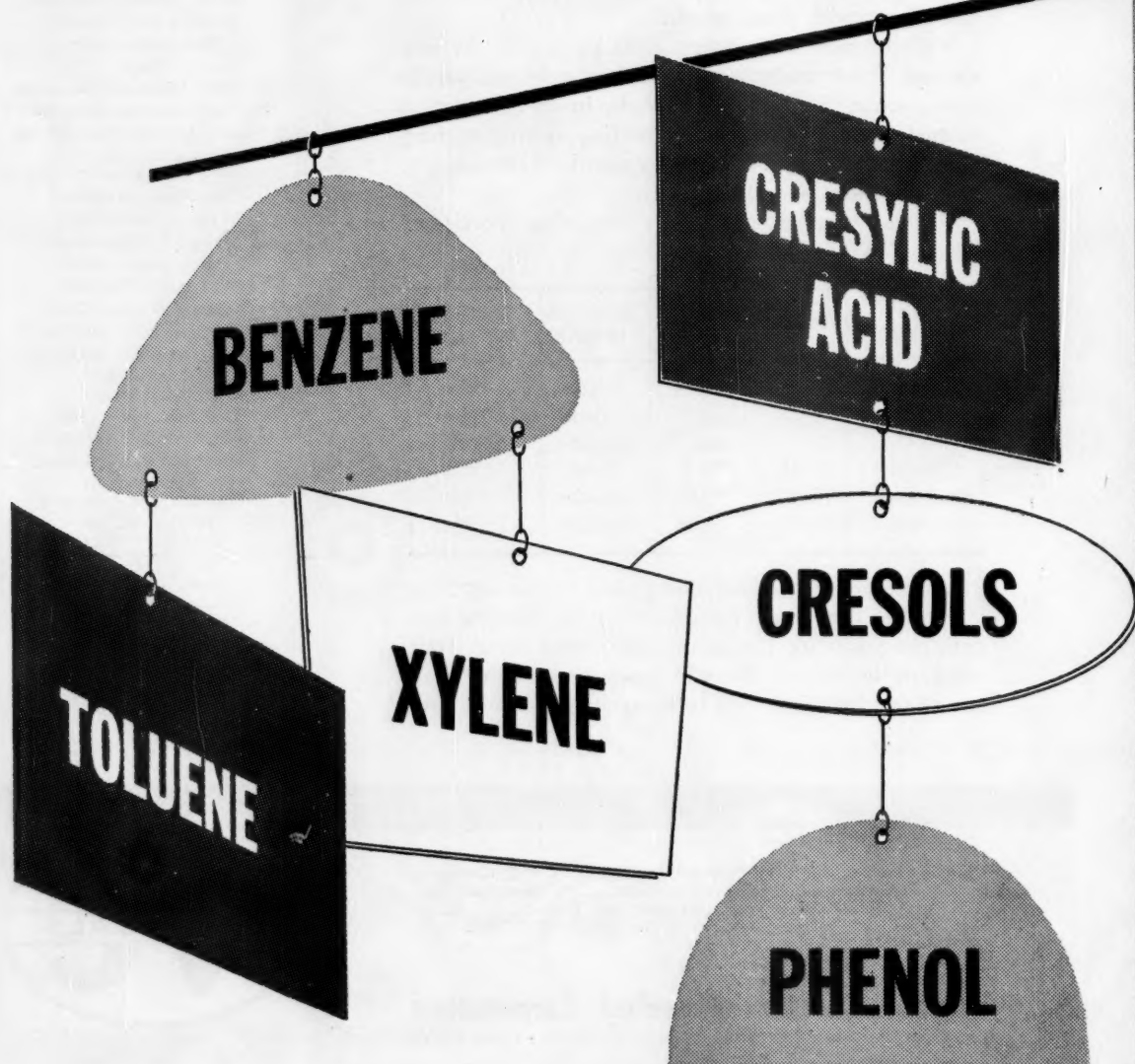
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Is Wall Street Interested in Chemical Research?

IT USED to be that the research director had to worry about the appeal of his program to his own management group only. That's still far and away the most important group for him to consider, of course. But more and more, he's learning that he has to concern himself with the way his research program looks to the financial world. Here's why:

In these days of tight money, practically all companies are finding that they have to rely to some extent on "outside" money to finance expansion. Moreover, the price of a company's stock is often a reflection of the opinion of financial people about the worth of a company. And research is now a magic word with investment men. They know that the future of a company in the chemical process (or other growth) industries hangs squarely on the quality of research being done right now. Security analysts, the specialists who advise major investment trusts, pension and mutual funds, won't recommend a company whose research program they don't like.

For instance, one good-sized, progressive chemical company is not now included in the portfolio of a mutual fund—because the managers of the fund feel that its research is not on a par with some of its competitors. Another large chemical company, which has made some significant research contributions in the past, is not regarded very highly by security analysts because the firm won't tell the investment world about its research plans.

Says William K. Beckers, a specialist in chemical and drug stocks at Spencer Trask & Co., a New York investment house whose clients number many large institutional investors: "We look closely at a company's research program; a research program that will achieve new products and a development group that can measure market possibilities are essential re-

quirements for a sound growth investment."

In agreement is Arthur D. Little's (Cambridge, Mass.) Richard Messing, who heads his firm's investment advisory service (which supplies chemical facts to many large investor clients, including Chemical Fund, Massachusetts Investors Trust): "There's little question that research strength is of real importance to professional investors. . . Research probably ranks second only to management capabilities among the nonfinancial factors considered."

Investment officers of leading New York banks point out that a company's research efforts and results now weigh just as heavily as other investment factors, e.g., capitalization, type of industry served, diversification.

Offering a brokerage firm's opinion is Winthrop Smith, managing partner Merrill Lynch, Pierce, Fenner & Beane, who agrees that the investor is more likely to place value in those companies that undertake to grow through research.

And Equitable Life Insurance Co. points out that it keeps a close eye on a firm's research program to satisfy itself that the company is keeping abreast of competition.

What They Look At: In judging a company's research, men from Wall Street are in accord concerning the important criteria:

- **Proved past-performance record.** They want to see productive results from past efforts, i.e., How successful has a company been in terms of the number of present products developed in the research lab, the quality of new products? They are interested in the money being poured into research. But they also want to see what comes out.

Similarly, analysts feel that trying to evaluate a firm's research results by comparing what percentage of the sales dollar it spends with that of other companies in the industry

is far too rough a yardstick.

Plant expansion is one way to gauge past research results. However, just expanding plants is not enough. Investment advisors aren't too impressed by a company expanding production of a basic chemical that's been around for a long time and on which profit margins have probably shrunk. Part of plant expansion must be for commercializing new products.

Nor are analysts impressed by a company that buys a packaged plant to make a product in which it has had no previous research experience. In polyethylene, for example, Carbide and Carbon and Du Pont are highly regarded because they accumulated a broad research background before they built plants. These firms are expected to stay ahead of the polyethylene novitiates.

- **Relationship of the research department to the rest of the company.** Analysts concur that the research department has to be tied in with the business and financial aspects of the company. On this score, Beckers emphasizes, "No matter how excellent a scientific program is carried out by a company, it can't achieve maximum results unless its new developments are supported by astute management and alert finance."

Stanford Research Institute (Palo Alto, Calif.) also thinks* that a most important criterion is top management's attitude toward research and development. SRI feels if you can get a line on management's thinking on general fields (which is more readily obtained than its plans in regard to particular products within any one field), you have a good line on the health of the company's research and development program.

- **Type of research projects.** To meet with Wall Street approval, research has to be concerned with more

* Partly based on its unpublished "Why Companies Grow," an exploratory study of some 200 manufacturing companies in the U. S. that have shown rapid growth in the decade 1939-49.

'Yes, Indeed,'

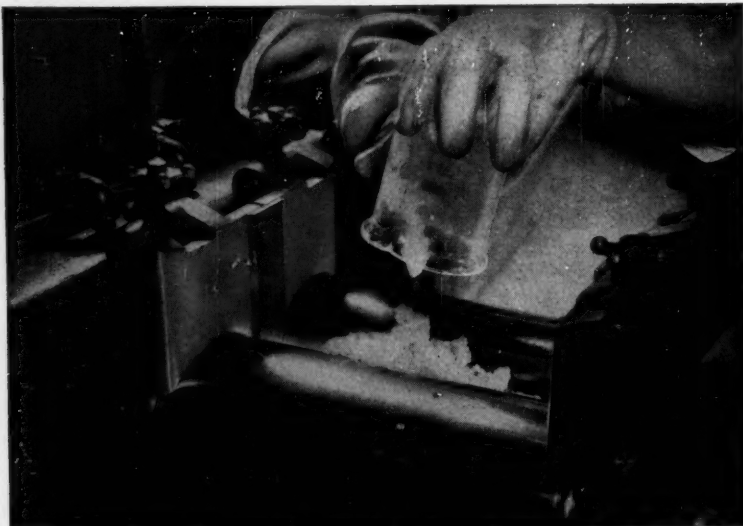
... says chemical stock analyst William Beckers of Spencer Trask & Co. 'A vigorous research program ... is essential for sound growth investment.'



'It sure is,'

... says A. D. Little's Richard Messing, who analyzes research for investment firms and others. 'Research strength is of real importance to investors.'





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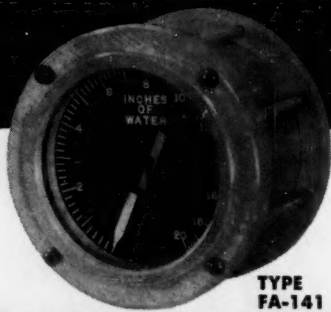
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RESEARCH

than variations on an established product. The financial men look favorably on new products based on established chemicals. But what they really like to see are new products from new chemicals.

Dow, for example, has traditionally used ethylene, chlorine and styrene as its main chemical raw materials, developed new and commercially successful products from them. Now the firm is branching out into fluorine and acetylene. That's the sort of research that most impresses financial people.

They look at basic research with mixed feelings. They feel it should be in an area pertinent to the company's interest, so findings can be utilized to improve present products or turn up a new line.

Where there's no indication of tangible commercial results (so-called pure basic research), the analyst feels that only big companies can afford such research.

- A well-organized technical-service plan also appeals to the analyst. This type of cooperative research between producer and consumer, he reasons, gives the producer a far better chance to introduce, improve and maintain its position in the market. Also, he feels it makes it tougher for a rival company to break in with a competitive product. Because of Du Pont's interest in technical service in fibers, for instance, it is a highly regarded investment from the standpoint of synthetic fibers.

- Research personnel and facilities. The technical director is regarded as the key man in the research organization. He's expected to organize, spark and guide operations. Investment men like to think of him as being capable and far-seeing, able to combine technical know-how with business acumen.

The quality of the company's research staff, and its hiring practices, are important to the financial analyst. One question he asks: Does the company hire top people in adequate numbers?

Other important considerations: What is the intellectual environment in which researchers operate? Are they allowed to operate as creative people? Is at least a portion of their time uncommitted to specific projects? Is creativity actively encouraged?

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RESEARCH

location is concerned, some analysts feel that a suburban or country location (which offers a scientist's family wholesome living conditions) is a definite help in attracting qualified men to a company.

• Commercializing research results. Financial men agree that management must demonstrate its faith in research by spending money to commercialize newly developed products. One analyst explains it this way: "A building program indicates to a certain extent new products coming out of the lab and going into production. It's expected the company will earn wider profit margins from these products than from older products."

How many new projects should be commercialized? That's hard to answer, but analysts agree that an ideal research program should come up with more alternatives for investment than the firm has money to invest.

Investment analysts also have opinions about how profits from a bonanza product should be spent. They feel the research division should insist that some of the earnings be put back into the research till, in one form or another, instead of paying out the initial high profits in dividends (after the development expenses are paid). As an example, Beckers cites Pfizer and its product, Terramycin. He points out that the firm didn't let income balloon to a tremendous net. Instead, Pfizer spent the money on making a huge expansion of its sales force. This, he feels, will enable it to deliver new products to the public faster.

What to Do About It? Security analysts get their information through familiar channels, i.e., meetings, personal contacts, and scientific literature. Mostly, they like to get first-hand information by dealing directly with management. And by cooperating with them on that, research management can go a long way in helping its own cause.

In the final analysis, research directors would be short-sighted to tailor their program to meet with approval from financial interests. But by the same token, most will admit that the yardsticks analysts have set up are good ones for the most part, and they wouldn't go far wrong by evaluating their research along similar lines. Whatever he does, the research director is finding out that Wall Street is bulking bigger in his future.



CHEMSTRAND TEAM: * In nylon sheers, new advantages.

Nylon Finds Fast Dyes

Dyers this week are getting further details of Chemstrand's new nylon coloring process (Technology CW Newsletter, Sept. 15).

In a special letter, Chemstrand is explaining to inquirers that its new Chemnyle process works with both filament and textured yarn, utilize chrome dyes as well as the acid and direct dyes mentioned in the firm's original report. The firm further claims Chemnyle-dyed sheer and tricot nylon fabrics are fast to washing at 160 F, don't fade after a minimum of 20 hours in accelerated light-fastness tests.

So far, there's no indication that the process—which involves addition of an undisclosed chemical to the dyebath at 205 F—requires any extension of regular dyeing time. And Chemstrand says it has been able to produce heavy brown, navy, black, and brown shades—quite a feat on nylon.

All this could be good news to textile processors who have yet to turn up a nylon-dyeing method that is satisfactory in all respects. Du Pont's highly durable spun-dyed nylon, for example, is available only in black. And dispersed colors, commonly used on nylon, lack light-fastness and wash-fastness.

*Left to right: Burnthall, Hindle, Guion.

But it will take time before Chemnyle's advantages and limitations can be fully evaluated in mills. Still unresolved, for instance, is how the process will work on fabrics that contain other fibers as well as nylon. This is just one of the questions.

Chemstrand has applied for a patent, expects to license Chemnyle to dyers for a nominal fee (probably not more than \$10). It admits that Chemstrand nylon users will get first crack at the process. But even they will have to know a lot more about the process before they treat appreciable quantities of nylon.

As outlined by Chemnyle's developers—associate textile research director Walter Hindle, dyeing researchers Edward Burnthall and Thomas Guion—the technique utilizes a new chemical compound that both controls and promotes dye absorption. About 2-3% of the compound is used, based on the weight of the material to be dyed. It is believed to cause the dye to form a colloidal suspension in the dye bath, permit the dye to "plate out" evenly on the fiber before being absorbed. Chemstrand has found 70 dyes, out of 250 tested, that can be used.

The identity of the mystery compound remains the big question in the minds of dyers. Their experience with

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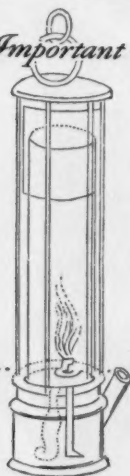
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RESEARCH

other chemical carriers has not always been encouraging. Phenolics, for instance, promote dyeing, but can impart an odor to dyed material. Chemstrand, however, states flatly that its new compound is not phenolic in nature. The firm is content to rest its case on how Chemnyle-dyed materials (which it expects will be on the market in about a month) are accepted by consumers.

EXPANSION

• United States Borax & Chemical Corp. plans to build an \$850,000 laboratory at Anaheim, Calif., ready it by next April. It will house research by all three of the company's divisions—



Analogy in Lather

SOAP BUBBLES are proving an aid to William Mullins (above) and other Westinghouse researchers in visualizing how atoms group themselves into orderly arrangements in crystal structures. Because the bubbles tend to join and balance much like atoms, they're helping to elucidate the crystalline nature of metals, may play a part in the development of better alloys for industry. Part of the nearly \$1 million worth of equipment in Westinghouse's new research laboratories near Pittsburgh, the bubble setup represents a six-million-fold scale-up of the actual distance between metal atoms.

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RESEARCH

Pacific Coast Borax, U. S. Potash, and 20 Mule Team Products.

- Next step in Armour Research Foundation's planned \$5-million expansion will be a \$575,000 addition to its metals research building. Construction begins in November. First stage—a \$1,250,000 physics and electrical engineering research building—was completed earlier this year.

- The Canadian government is expected to award contracts shortly for construction of a \$4-million science service laboratory at its Central Experimental Farm in Ottawa.

- Monsanto will add a new research wing to its facilities at Texas City. In 1947, there were only 12 researchers on the site. When the addition is complete, in the fall of 1957, the Texas City research staff is expected to number about 200.

- Sinclair Research Laboratories, Inc., has started construction of a radiation laboratory on the grounds of its 40-acre, Harvey, Ill., research center. It will reportedly use the most powerful source of gamma-ray radiation yet made available to a private industrial research laboratory, namely up to 800 grams of U-235 contained in spent fuel elements. That's what Sinclair is entitled "to receive or possess" under a special nuclear material license issued by the Atomic Energy Commission. The license is believed to be the first issued to an industrial firm to use spent fuel elements as a source of gamma rays in research. Sinclair will evaluate radiation on petroleum cracking, hydrocracking, hydrogenation and isomerization, obtain its spent fuel elements from the AEC Materials Testing Reactor near Idaho Falls, Idaho.

- Recently dedicated laboratories include Parke, Davis' \$2-million Canadian labs (Brockville, Ont.) and Koppers' plastic and latex development laboratory (Kobuta, Pa.).

- Rem-Cru Titanium Corp. has purchased a 263-acre tract near Midland, Pa., for a new research laboratory and administration offices.

- Construction has started at Towanda, Pa., on a new engineering and pilot production facility for Sylvania's Tungsten and Chemical Division. A three-story, 48,000-sq.-ft. brick building, it will be used for research on semiconductors, phosphors, chemicals and metallurgy, is slated for completion by mid-1957.

SPECIALTY MARKET BUILDERS (from Monsanto)



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Santophen 1: A Line Builder

All at once, specialty manufacturers seem to have awakened to the fact that Santophen* 1 (o-benzyl-p-chlorophenol) can be the base for an entire cleanser-sanitizer-disinfectant product line. The re-interest (since the product has been available for several years) is centered on three properties that set this germicide off from other runners-up in the specialty germicide field: the compound is comparatively free of odor, has low toxicity to humans, and is far less irritating to the skin than other disinfectant materials.

How these three unique properties ring a bell with specialty formulators is shown by the kinds of products in which Santophen 1 has made a big hit. Outstanding are the rug shampoos, where 3-4% of Santophen 1 in a coco oil or anionic detergent base gives rugs a sanitizing bath, leaving behind a fungicidal residue that protects the backing and nap against mildewing. This rug cleaner is particularly appreciated by hotels as insurance against "mustiness" in corridors and rooms. Formulated as a hospital disinfectant, the low odor makes the finished formulation pleasant to have around day after day—particularly since the compound is effective against both gram-positive and gram-negative organisms and fungi.

Last and not least, the low order of toxicity and absence of skin irritability in practical concentrations have caught the eye of formulators of laundry rinses.

A germ-discouraging final rinse can give commercial laundries something they can really advertise: ergo: "Not only spotless, but SANITIZED." This has a strong business pull for the laundry because the tiny amount of Santophen 1 that concentrates on the shirts, frocks, and diapers appears to have a tendency to minimize odor when the washables are worn.

The only drawback to formulators.

using it "across-the-board" is not a serious one, particularly in view of the compound's low cost. Santophen 1 must be formulated with a saturated fatty acid soap, such as coco oil or with a non-ionic synthetic. High-iodine-number fatty acid soaps (corn, tall oil, soya, rosin) and non-ionic and cationic detergents have a tendency to reduce the germicidal power on storage. But since so little does so much, most formulators are happy to take the few precautions necessary. In fact, changing the formulation of a pine-type sanitizer can actually reduce the final mixed goods cost. The high germi- and fungicidal power of Santophen 1 adds up to a good profit picture for the formulator. In concentrations as low as 75 ppm, it kills *trichophyton interdigitate*, principal cause of athlete's foot; 250 ppm control common mold (*penicillium glaucum*). This effectiveness in low concentrations has made it promising as a mold-control agent to keep water sweet and odor-free in closed circulating air conditioning systems. The negligible danger of toxicity to higher animals in handling makes it popular for poultry and livestock shelter germicides, rest-room sanitizers, and locker-room scrubbing compounds.

For the complete story on Santophen No. 1 and Santolite* MHP (described below) write today. Laboratory-size samples on request. Please, however, do not request special formulations or reveal your formulation to Monsanto... since this is your private, often most valuable property. Write to: Organic Chemicals Division, MONSANTO CHEMICAL COMPANY, Dept. CS-1, St. Louis 1, Missouri.

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CHEMICAL WEEK • ADVERTISERS INDEX

September 29, 1956

AIR REDUCTION CHEMICAL CO. 43	NOPCO CHEMICAL CO. 9
Agency—G. M. Basford Co.	Agency—Lewin, Williams & Taylor, Inc.
AMERICAN AGRICULTURAL CHEMICAL CO., THE 80	NORFOLK & WESTERN RAILWAY 60
Agency—Donahue & Co., Inc.	Agency—Houck & Co.
AMERICAN POTASH & CHEMICAL CORP. 35	OLIN MATHIESON CHEMICAL CORP. 6-7
Agency—The McCarty Co.	Agency—Doyle, Kitchen & McCormick, Inc.
ANTARA CHEMICALS DIV., GENERAL ANILINE & FILM CORP. 81	SHEA CHEMICAL CO. 44
Agency—The House of J. Hayden Twiss	Agency—Doe Anderson, Adv. Agency
ARMOUR & CO. 58-59	SHELL CHEMICAL CORP. 2nd Cover
Agency—Foote, Cone & Belding, Inc.	Agency—J. Walter Thompson Co.
ATLANTIC REFINING CO. 45	SINCLAIR CHEMICALS, INC. 3rd Cover
Agency—N. W. Ayer & Son, Inc.	Agency—Moore, Hamm & Johnston, Inc.
BEACON CHEMICAL INDUSTRIES, INC. 66	TITANIUM PIGMENT CORP. 63
Agency—Mina Lee Simon, Adv.	Agency—Doyle, Kitchen & McCormick, Inc.
BERKSHIRE CHEMICALS, INC. 66	UNITED STATES BORAX & CHEMICAL CORP., PACIFIC COAST BORAX CO. 63
Agency—Givaudan Adv., Inc.	Agency—Howard M. Irwin & Assoc.
BIRD MACHINE CO. 15	U. S. RUBBER CO. 19
Agency—Walter B. Snow & Staff, Inc.	Agency—Fletcher D. Richards, Inc.
CARBIDE & CARBON CHEMICALS CO., DIV. OF UNION CARBIDE & CARBON CORP. 37	U. S. STEEL CORP., CHEMICALS DIV. 74-75
Agency—J. M. Mathes, Inc.	Agency—Batten, Barton, Durstine & Osborn, Inc.
CARLISLE CHEMICAL WORKS, INC. 34	U. S. STEEL CORP., STEEL PRODUCTS DIV. 41
Agency—Ellington & Co., Inc.	Agency—Batten, Barton, Durstine & Osborn, Inc.
CELANESE CORP. OF AMERICA 49	VIRGINIA-CAROLINA CHEMICAL CORP. 73
Agency—Michel-Cather, Inc.	Agency—Albert Sidney Noble, Adv.
CHEMICAL CONSTRUCTION CORP. 12-13	WALLACE & TIERNAN, INC. 78
Agency—Michel-Cather, Inc.	Agency—Branstater Assoc., Inc.
DISTILLATION PRODUCTS INDUSTRIES, DIV. OF EASTMAN KODAK CO. 3	WILNER WOOD PRODUCTS CO. 36
Agency—Charles L. Humrill & Co., Inc.	Agency—Silton Brothers, Inc.
DOW CHEMICAL CO., THE 51	WOLF & CO., JACQUES 5
Agency—MacLennan, John & Adams, Inc.	Agency—Riedl & Frede, Inc.
DU PONT DE NEMOURS & CO., INC., E. I., ORGANIC CHEMICALS DEPT. 20	WYANDOTTE CHEMICALS CORP. 85
Agency—Batten, Barton, Durstine & Osborn, Inc.	Agency—Brooke, Smith, French & Dorrance, Inc.
DURIRON CO., THE 4	
Agency—Kircher, Helton & Collett, Inc.	
EASTMAN CHEMICAL PRODUCTS, INC. 29	
Agency—Fred Wittner, Adv.	
FOOD MACHINERY & CHEMICAL CORP., CHEMICAL DIV. 2	
Agency—James J. McMahon, Inc.	
GENERAL AMERICAN TRANSPORTATION CORP., WIGGINS GASHOLDER DIV. 26	
Agency—Weiss & Geller, Inc.	
GIRDLER CO., THE 57	
Agency—The Griswold-Eshleman Co.	
GOODYEAR TIRE & RUBBER CO. 1	
Agency—Kudner Agency, Inc.	
GROSS & CO., A. 82	
Agency—G. M. Basford Co.	
GULF OIL CORP. 11	
Agency—Young & Rubicam, Inc.	
HARSHAW CHEMICAL CO., THE 14	
HERCULES POWDER CO. 70	
Agency—Fuller & Smith & Ross, Inc.	
HEYDEN CHEMICAL CORP. 4th Cover	
Agency—Sommers-Davis, Inc.	
HOOVER ELECTRO-CHEMICAL CO. 87	
Agency—Charles L. Humrill & Co.	
INDOIL CHEMICAL CO. 52	
Agency—D'Arcy Adv. Co.	
INTERNATIONAL SALT CO. 53	
Agency—Batten, Barton, Durstine & Osborn, Inc.	
KELCO CO. 48	
Agency—Cayton, Inc.	
KOLKER CHEMICAL CORP. 60	
Agency—The House of J. Hayden Twiss	
LUCIDOL DIV., WALLACE & TIERNAN, INC. 84	
Agency—Barber & Drillard, Inc.	
LUMMUS CO., THE 18	
Agency—G. M. Basford Co.	
MCKESSON & ROBBINS, INC. 82	
MAAS CHEMICAL CO., A. R. 40	
Agency—Helms & Co., Inc.	
MERCHANTS CHEMICAL CO., INC. 10	
Agency—G. M. Basford Co.	
MONSANTO CHEMICAL CO. 85	
Agency—Gardner Adv. Co.	
MORGAN CO., PETER 84	
Agency—Tomaso, Helmer & Lane, Inc.	
NATIONAL ANILINE DIV., ALLIED CHEMICAL & DYE CORP. 79	
Agency—James J. McMahon, Inc.	

tracers SECTION

(Classified Advertising)

F. J. Eberle, Business Mgr.

CHEMICALS: Offered/Wanted 87	
BUSINESS OPPORTUNITY 87	
EMPLOYMENT 86 & 87	
EQUIPMENT: Used/Surplus New For Sale 87	
MANAGEMENT SERVICES 88	

ADVERTISING STAFF

Atlanta 3	Robert H. Powell Rhodes-Haverty Bldg., Walnut 5778-2383
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New York 36	Knox Armstrong, P. F. McPherson, Charles F. Onasch, L. Charles Todaro, 330 West 42 St. Longacre 4-3000
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